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ABSTRACT

This background paper is a result of a literature review conducted under Project FORUM that identifies research-based inputs and processes related to student outcomes. It was intended to provide background information for the participants attending the Wingspread Conference on Inputs and Processes in October, 1998. In addition, the report is designed to assist state and local education agencies identify independent variables that should be the focus of systems change in order to positively impact student outcomes. Information is provided regarding selected research findings and information about state practices related to the following educational input factors and educational process factors: (1) certified and qualified staff; (2) vision; (3) leadership; (4) school size; (5) class size; (6) physical and school arrangements; (7) safe and orderly environment; (8) comprehensive, balanced curriculum; (9) systematic, tailored instruction; (10) time; (11) scheduling; (12) grouping; (13) technology; (14) parent, family, and community involvement; (15) instructional climate and school culture; (16) professional development; and (17) school and community-based management. (Contains approximately 300 references.) (CR)

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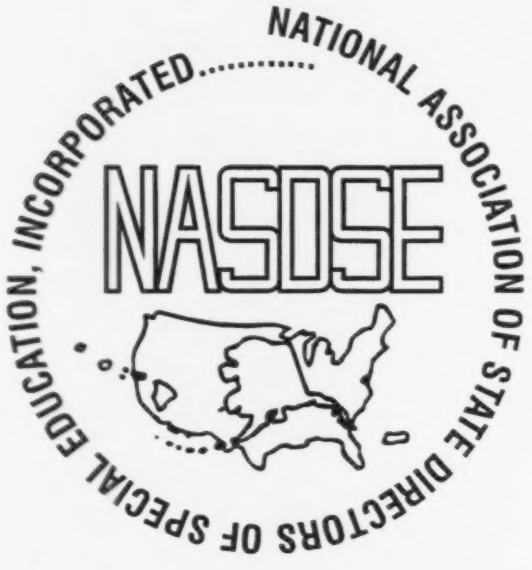
INPUTS AND PROCESSES IN EDUCATION
A Background Paper

by

Judy A. Schrag, Ed.D.



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Project FORUM at National Association of State Directors of Special Education (NASDSE) is a cooperative agreement funded by the Office of Special Education Programs of the U. S. Department of Education. The project carries out a variety of activities that provide information needed for program improvement, and promote the utilization of research data and other information for improving outcomes for students with disabilities. The project also provides technical assistance and information on emerging issues, and convenes small work groups to gather expert input, obtain feedback, and develop conceptual frameworks related to critical topics in special education.

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Abstract

This background paper is a result of a literature review conducted under Project FORUM that identifies research-based inputs and processes that are related to student outcomes. It is intended to provide background information for the participants attending the *Wingspread Conference on Inputs and Processes* in October, 1998. In addition, this report can assist state and local education agencies identify independent variables that should be the focus of systems change in order to positively impact student outcomes. Information is provided regarding selected research findings and information about state practices related to the following seven educational input factors and twelve process factors:

Educational Input Factors:

- Certified and Qualified Staff
- Vision
- Leadership
- School Size
- Class Size
- Physical and School Arrangements
- Safe and Orderly Environment

Educational Process Factors:

- Comprehensive, Balanced Curriculum
- Systematic, Tailored Instruction
- Time
- Scheduling
- Grouping Arrangements
- Scheduling
- Technology
- Parent, Family, and Community Involvement
- Instructional Climate
- Professional Development
- School and Community-Based Management
- School Culture and Attitudes

As is discussed in the conclusion of this paper, the input and process variables discussed do not independently produce the observed student outcomes. The interaction of independent variables is difficult to assess and measure in applied research such as in the schools. As a consequence, little is available in the body of research and literature that decisively determines their interaction impact on student outcomes.

INPUTS AND PROCESSES IN EDUCATION
A Background Paper

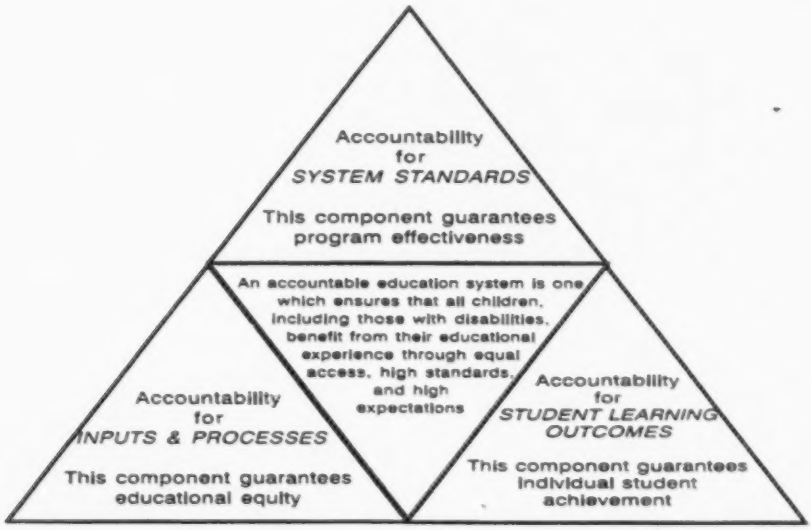
Introduction

NASDSE Model of Accountability[1]

A philosophy of a balanced accountability encompasses an educational system which ensures that all children, including those with disabilities, benefit from their educational experience through equal access, high standards and expectations, and become caring, productive, and socially involved citizens who are committed to life-long learning.

The *Vision for a Balanced System of Accountability*, published in 1995 by the National Association of State Directors of Special Education (NASDSE), contains three components:

- System Accountability
- Individual Student Accountability
- Input/Process Accountability


Accountability for SYSTEM STANDARDS
This component guarantees program effectiveness
An accountable education system is one which ensures that all children, including those with disabilities, benefit from their educational experience through equal access, high standards, and high expectations
Accountability for INPUTS & PROCESSES
This component guarantees educational equity
Accountability for STUDENT LEARNING OUTCOMES
This component guarantees individual student achievement

[1]This paper is part of background materials to be provided to the October 1998 Wingspread Conference participants. Also included will be further explanations of the NASDSE model of accountability and outcomes of the first two Wingspread Conferences.

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The NASDSE model of accountability envisions a dynamic balance between and among the three major components of the system, each of which performs a unique function to provide balance.

The inputs and processes leg of the accountability triangle had, in the past, been implemented through compliance monitoring. Often usurping the entire function of accountability, it was seen as a tyrant because it had caused exclusive focus on inputs and processes to the exclusion of student outcomes. As a result, the system component of accountability had acquiesced to the inputs and processes tyrant not only within the monitoring process, but in other ways such as allowing the exclusion of students with disabilities from district and state assessments. However, with the development and refinements of monitoring and the developments in education reform, accountability has shifted to the outcomes component. There has been more recognition to include *all* students in systems assessment and accountability for each individual student. It is essential that the importance of inputs and processes not be lost in the awakening of the importance of outcomes in measuring accountability. There must be balance and interplay among these three accountability legs--inputs, processes, and outcomes-- if we are to protect the rights of students with disabilities, improve their learning outcomes, and ensure educational equity.

Equity

Educational equity (American Institute for Research, 1998) has been defined as treating students with similar needs in similar ways (horizontal equity) and treating students with different needs in systematically different ways so that all have access to adequate levels of resources (vertical equity). An example of horizontal equity would involve all general education students receiving access to the same opportunities to learn and the same resources necessary to accomplish this goal. An example of vertical equity would involve providing the additional resources required to meet the special needs of students with disabilities relative to students in general education programs.

Due process provisions within general and special education have been another vehicle to assure equity among all students. In addition to due process rights related to suspension and expulsion of students, due process as well as property interests have been tested within the courts in areas such as requiring competency tests as minimal criteria for the awarding of high school diplomas. Due process issues have also been raised about validity and reliability issues within testing and assessment.

Within special education, due process and procedural safeguards are required by both federal (i.e., the Individuals with Disabilities Education Act or IDEA and Section 504 of the Rehabilitation Act or Section 504) and state laws. These safeguards include confidentiality of student records; the use of valid and reliable tests; notice to parents prior to the initiation of identification, evaluation, and placement of their child; and the right to an impartial due process hearing to resolve differences between school personnel and the parents regarding these same issues as well as individual education program (IEP) concerns. Due process and other procedural safeguards are intended to ensure educational equity of students with disabilities and, specifically, to guarantee that a free appropriate public education is being provided for these students.

There are a number of inputs and processes that can insure educational equity. Linn and Baker (1998) point out that some system indicators are directly controlled by schools, while others are marginally under the control of schools because they depend on larger system policies or financial considerations not controlled by the school. Still others, such as demographics or student mobility, are clearly outside the control of the schools.

Within this paper, the variables that are outside the control of the schools (including student and teacher demographics and economic conditions such as poverty level and socio-economic level) have been excluded from discussion except for an occasional reference. In addition, this background paper makes the assumption that the majority of students with disabilities spend the majority of their time in general education and that special education is an integral part of and support to the general education system. Therefore, research and practice dealing with inputs and processes in general education impacting student outcomes are relevant and can be generalized to special education. Thus, the research and practice discussed is from both the general and special education literature.

Purposes of Background Paper

With the above condition and assumption, as well as the concept of balance and interconnectedness between inputs, processes, and outcomes, the overall purpose of this paper is to present the findings of a selected review of the research and literature regarding inputs and processes that impact achievement and other student outcomes within the schools. The paper provided background information for the participants attending the October 1998 Wingspread Conference - *Accountability in Special Education: Input/Processes Accountability*.

CONSIDERATIONS FOR IDENTIFYING AND RELATING INPUTS AND PROCESSES TO RESULTS

Definitions

Inputs

Inputs that are under the control of the policy makers, the state, and the schools include such things as teacher characteristics (e.g., certification, educational background, and years of experience), vision, leadership, school size, class size, physical and school arrangement, and fiscal resources.

Processes

Educational processes involve the application of inputs and cover such items as student access to a comprehensive and balanced curriculum; systematic and tailored instruction; time for learning; grouping; scheduling; use of technology; parent, family, and community involvement; instructional climate and school culture; the quality and frequency of professional development opportunities provided to teachers and other school staff; and school and community-based management.

Interactions Between Inputs, Processes, and Outcomes

Catteral (1997) suggested that the mere presence of resources (e.g., a teacher with certain skills, given set of curriculum materials and a manageable student-teacher ratio) does not ensure positive student outcomes. According to Levin (1983), it is the productive capacity (inputs) applied with effort (processes) over time (involving dynamics, culture, and interactions) that produce outcomes. The review of the literature within this paper has differentiated variables within selected inputs and processes, suggesting an interplay between basic *input* ingredients and the *process* of carrying out teaching and learning.

Contributions of Opportunity to Learn Standards and Accreditation to Inputs and Processes

Opportunity to Learn

The concept of *opportunity to learn* (OTL) strategies or standards was first introduced several decades ago and was defined by a narrow set of instructional components. Since then, educators and policy makers have added many other criteria to the OTL concept. The original purpose of OTL was introduced by the International Association for the Evaluation of Educational Achievement to describe aspects of the education process (Schwartz, 1995). After the positive impact of well-designed OTL strategies on student achievement became clearer, they have been used to indicate overall educational quality and, more specifically, the availability and use of education resources. As the discussions of OTL found their way to the federal level as a part of mandated national standards, however, there was much controversy embroiled in the reactions against potential federally-dictated standards.

As a reaction to this controversy, the OTL standards became voluntary with the *Goals 2000: Educate America Act (P.L. 103-227)* that became law on March 31, 1994. The intent of OTL standards within this legislation was to enable all students, including students with disabilities, to achieve world-class educational standards and to learn challenging content to a high level of performance. In *Goals 2000*, OTL standards were defined as "the criteria for, and the basis of assessing the sufficiency or quality of the resources, practices, and conditions necessary at each level of the educational system to provide all students with the opportunity to learn the material in voluntary national content standards or state content standards" [Section (3)(a)(7)]. Further, the voluntary national opportunity-to-learn standards [Section 213(c)(2)] addressed the following:

- Curricula, instructional materials, and technologies.
- Teacher capability.
- Continuous professional development.
- Alignment of curriculum, instructional practices, and assessments with content standards.
- Safety and security of the learning environment.
- Non-discriminatory policies, curricula, and instructional practices.
- Other factors that help students receive a fair opportunity to achieve the knowledge and skills in the content standards.

Within the context of OTL standards, input conditions that generally provide opportunity to learn include: availability and qualifications of teachers, instructional materials, and curriculum. Content and instructional quality are the essence of the OTL standards and the best predictors of student achievement (National Center on Educational Outcomes, 1995).

Guiton and Oakes (1995) have suggested that comparing the wide OTL differences among schools in the nation and resulting differences in student achievement can demonstrate educational equity and inequity. Schwartz (1995) reported that comparing OTL evaluations across schools can provide information about which schools have adequate resources, deploy them effectively, and provide equal educational access.

Regional Accreditation[2]

Accreditation is the formal recognition that a school has met a set of standards that a community has defined as indicators of quality. The chief purpose of the accreditation process is the improvement of education for youth by evaluating the degree to which a school has various inputs and processes in place, and has attained worthwhile school, staff, and student outcomes. Originally, accreditation procedures focused exclusively on concrete input factors such as type of facilities and numbers of library books. As it has evolved, other areas of accountability have been added to accreditation including various components of outcomes. Increasingly, accreditation is providing an opportunity to express the balance between inputs, processes, and outcomes. Independent agencies that accredit colleges and secondary schools and sometimes elementary schools are listed in footnote 2. In addition, state education agencies (SEAs) also accredit elementary and secondary schools, a subject to be discussed in a subsequent section of this paper.

This accreditation shift to include inputs, processes, and outcomes was stimulated by a national working group convened by the U.S. Department of Education in 1997 that developed a document, *Indicators of Quality*, that included a set of indicators for school communities to use as they go into the accreditation process. These research-based indicators can help determine how well the schools are doing and identify improvements that can be made. The *Indicators of Quality* were a broader effort on the part of the six regional commissions that accredit public and private schools to become a bigger force for school reform (Viadero, 1997).

Consistent with this trend toward including outcomes as an accreditation factor, *Accreditation for Growth* is an optional accreditation process that the Middle States Commission on Secondary Schools is offering to its members and those schools considering membership. This relatively new option is a clear shift in school evaluation by assessing outputs along with inputs. The traditional approach focuses primarily on the makeup of the school (e.g., inputs and processes), rather than on its outcomes or accomplishments. The focus of *Accreditation for Growth* is upon

[2] According to Portner (1997), six regional agencies accredit 19,000 high schools and 9,000 more public schools throughout the country (i.e., Southern Association of Colleges and Schools, New England Association of Schools and Colleges, Northwest Association of Schools and Colleges, Middle States Association of Colleges, North Central Association of Schools and Colleges, and Eastern Association of Schools and Colleges). Accredited secondary schools enroll 70 to 75 percent of the U.S. high school students, and accredited elementary schools enroll between 30 and 40 percent of elementary school students.

outcomes in terms of student achievement. A school that establishes objectives leading to student achievement and demonstrates that the objectives have been met, will be awarded accreditation.

Lauree Harp of the National Study of School Evaluation (Clinard & Foster, 1998) estimated that nearly 1,000 schools nationwide are engaged in at least one step of a school improvement process tied to regional accreditation by the regional agencies. In *Oregon*, about 100 schools are involved in the School Improvement Process for regional accreditation with the Northwest Association of Schools and colleges. The Southern Association of Schools and Colleges is granting accreditation through the Tennessee School Improvement Planning Process that was mandated by the *Tennessee* Board of Education.

State Accreditation

The Education Commission of the States found that 26 states have implemented performance-based accreditation (Clinard and Foster, 1998 and CCSSO, 1995). Following are several examples of state efforts that are using outcome along with input and process factors within accreditation.

- The *Missouri School Improvement Program* (MSIP) is the state's school accreditation program and an important component of efforts to promote school improvement within the state's 525 school districts. The MSIP has a dual agenda: accreditation of the school districts, and supporting school district improvement. The MSIP reviews school districts on a five-year cycle. Since its inception, improvements have been identified in three areas: technology, facilities, and curriculum (King, 1998).

- *Montana* is piloting a five-step process that places control of state accreditation with local educators and communities.

- *Iowa* has mandated a process similar to Montana's voluntary approach.

- *Kansas* is an example of another state that has developed a performance accreditation system (i.e., the Quality Performance Accreditation System, QPA) as an attempt to focus the state's educational resources through collaborative, long-term strategic planning, using defined outcomes and benchmarks to determine if students have the desired skills, attitudes, and knowledge levels based on agreed-upon outcomes (CCSSO, 1993).

Compliance Monitoring

Public Law 94 - 142 was originally passed in 1974 as a process law; i.e., a set of procedural safeguards and a process of identification, evaluation, IEP planning, and IEP implementation for students with disabilities. This process focus of the federal law led to federal and state compliance monitoring constructs that were procedural in nature with the assumption that quality programs for students with disabilities would result from the systematic implementation of the special education process outlined in federal law. Since 1974, both the U.S. Department of Education, Office of Special Education Programs (OSEP) and SEA's have implemented monitoring systems to assess compliance with applicable statutes and regulations pertaining to programs and services for students with disabilities.

Originally termed the Program Administrative Review, the set of activities used by OSEP to conduct on-site and off-site compliance reviews within the states has evolved into a continuous improvement process. In moving to a continuous improvement process, the monitoring balance has shifted from process to systemic change leading to improved student outcomes. Many states have also made this change in carrying out their monitoring responsibilities toward LEA's. However, the SEA's and OSEP have recognized that with the monitoring shift to outcomes, there is still an important need to focus on inputs and process, as well. Within the *Nineteenth Annual Report to Congress on the Implementation of the Individual With Disabilities Education Act* (U.S. Department of Education, 1997), OSEP "recognizes the critical importance of its compliance monitoring responsibility and activities," but also "places the highest priority on compliance with those IDEA requirements that have the strongest relationship with improved services and results for students with disabilities and their families" (p. III-43).

Variability

In identifying policy-relevant variables that contribute to student outcomes, it is important to recognize that not all outcomes are equally relevant. What might be considered "primary" for one school, school district, or state, might be considered "secondary" for another. There are a number of variables to be considered that differ from community to community and from state to state. These variables include such things as political climate, specific legislation, unique combinations of resources, student enrollment patterns, student mobility, demographics, scale of implementation, and human talent.

SELECTED EDUCATIONAL INPUTS

Certified and Qualified Staff

The quality of school staff has been measured in many different ways (e.g, their degrees, fields of study, certification, experience, scores on licensing exams, participation in staff development, and test results of their students). With few exceptions, research has demonstrated a direct link between staff qualifications and improved student performance.

Dimensions of Teacher Capacity

Teachers need knowledge of their subject matter, curriculum, students, and general and subject-specific pedagogy in order to help students learn (Carpenter et al., 1989; Shulman, 1986; Wilson & Wineberg, 1988). Research studies show that teachers must have a deeper and more flexible knowledge base to help students reach new standards than is needed for basic skills approaches (Ball & McDiarmid, 1990; McDiarmid, Ball & Anderson, 1989).

A second dimension of teacher capacity is skills. Research such as that done by Ball & McDiarmid (1990) showed that there is a considerable gap between teachers' beliefs about how they should be teaching to satisfy new reforms focused on improved student results and their ability to actually do so.

A third teacher capacity dimension is disposition. Disposition includes teacher attitude toward subject matter, attitudes toward students, expectations for student achievement, and beliefs about student success. Disposition is needed to meet new standards for student learning and to make necessary changes in practice (Katz & Raths, 1986; National Center for Research on Teacher Education, 1988 in Council for Policy Research in Education or CPRE,1995a). CPRE (1995a) reported that the capacity to teach in different ways is connected to teachers' views of self and their role in the classroom. A final dimension of teacher capacity to impact enhanced student outcomes relates to views of self. A literature review conducted by Dimock (1992) dealing with influences of school context on student learning, found that a teacher's attitude toward change is dependent upon how change affects the teacher personally.

Relationship of Teacher Education and Certification to Student Outcomes

Although some studies have found no relationship between teacher education levels and student outcomes, a quantitative review of 46 studies (all of which employed data averaged over schools or districts) concluded that there is a positive relationship between levels of teacher education and levels of student test scores (Greewald, Hedges, & Laine, 1996).

In an analysis of 900 Texas school districts, Harvard economist Ronald Ferguson found that teacher expertise, as measured by scores on a licensing examination, master's degrees, and experience, was the single most important determinant of student achievement, accounting for roughly 40 percent of the measured variance in students' reading and math achievement gains in

grades 1-12. After controlling for socioeconomic status, the large disparities in achievement between black and white students were almost entirely due to differences in the qualifications of their teachers. In combination, differences in teacher and class sizes accounted for as much of the measured variance in achievement as did student and family background (Miles & Darling-Hammond, 1988).

Ferguson's findings within 900 Texas school districts were replicated in a study of Alabama districts conducted with economist Helen Ladd, in which teacher qualifications and class size together accounted for more of the test score variation between high and low-scoring districts than the combined effects of poverty, race, and parent education (Miles & Darling-Hammond, 1988).

Miles and Darling-Hammond (1988) discussed a Tennessee study in which elementary school students who were assigned to ineffective teachers for three years in a row scored nearly 50 percentile points lower on achievement tests than those assigned to highly effective teachers over the same period. They also referred to work by the National Commission on Teaching and American's Future indicating that new teachers hired without meeting certification standards (25 percent of all new teachers) are usually assigned to teach the most disadvantaged students in low-income and high-minority schools, while the most highly educated new teachers are hired largely by wealthier schools. Students in poor or predominantly minority schools are much less likely to have teachers who are fully qualified or who hold higher-level degrees. In schools with the highest minority enrollments, students were reported to have less than a 50 percent chance of getting a math or science teacher with a license and a degree in the field. In 1994, one-third of teachers in high-poverty schools taught without even a minor in their main field, and nearly 70 percent taught without a minor in their secondary teaching field. Teachers who majored in a subject were likely to be more committed to it and to bring more enthusiasm to their teaching.

Darling-Hammond (1997) reported on studies that have consistently indicated that under-prepared teachers are less effective with students and have difficulty with curriculum development, classroom management, student motivation, and teaching strategies. These teachers are less likely to understand students' learning styles and differences, to anticipate students' knowledge and potential difficulties, and to plan and redirect instruction to meet students' needs.

Eleanor Armour-Thomas and colleagues conducted a study that compared a group of exceptionally effective elementary schools with a group of low-achieving schools having similar demographic characteristics in New York City (Darling-Hammond, 1997). They found that roughly 90 percent of the variance in student reading and mathematics scores at grades 3, 6, and 8 was a function of differences in teacher qualifications. The schools with highly qualified teachers who served large numbers of minority and low-income students performed as well as more advantaged schools.

Over 200 studies found that teachers with greater training in both their subject matter and in education (knowledge of teaching methods, learning, and development) are more highly rated and more effective with students in fields ranging from science and mathematics to elementary reading and early childhood education (Darling-Hammond & Berry, 1988). Darling-Hammond & Berry (1988) reported on one study involving high and low-achieving schools in New York City with

similar student populations, in which 90% of the variation in student reading and math test scores was a function of teacher qualifications.

A study conducted by Goldhaber & Brewer (1996) surveyed 18,609 students in 8th grade and again in 10th grade. This study found that several teacher characteristics appear to make a difference in student performance. Teachers certified in mathematics and those with bachelors or masters degrees in mathematics and science were associated with higher student performance scores. Mathematics and science degrees were not found to influence student outcomes in English and history, suggesting that it is the subject-specific training rather than teacher ability that results in improved student performance.

Other Variables Associated with Effective Teachers

After analysis of 88 studies of the antecedents and consequences of teacher efficacy, Ross (1994) found that personal attributes and organizational characteristics were associated with higher teacher effectiveness in working with students. Higher efficacy was associated with being female, the teacher's attribution of student success and failure to forces within his/her control, elementary level teaching rather than middle and high school teaching, students who are relatively orderly and of higher ability, school characterized by low stress, leadership responsive to teacher needs, the use of teaching techniques which are more challenging and difficult, the teacher's willingness to implement innovative programs, developmental classroom management practices, and enhanced student mastery of cognitive and affective goals.

Vision

A shared vision among students, faculty, parents, and the external community is a feature of schools in which all students are most likely to succeed academically (Dimock, 1992). Numerous researchers have found that sharing a common vision increases the likelihood that school improvement efforts will succeed and that improved student outcomes will result (Beer, Eisenstat, & Spector, 1990; Carlson, 1987; Deal, 1985; Milies & Louis, 1990; and Norris & Reigeluth, 1991). Hargreaves (1995), however, argued that vision and mission work better if they are temporary and approximate, and do not require complete consensus. In addition, he indicated that teachers and schools should review and renew their purposes over time. Fullan (1993) has suggested that it is not a good idea to borrow someone else's vision. Vision and purpose come from within and cannot be imposed.

In a literature review conducted by Dimock (1992) on the effects of school context on academic achievement, a shared vision among students, faculty, parents, and the external community was found to be a feature of schools in which all students are most likely to succeed academically.

A study of dropouts in Ontario, Canada high schools (Greene, 1998) identified factors from research on exemplary secondary schools and then tested these factors as a causal model of school-related factors that influence the dropout problem. Six categories were found to correlate with both school effectiveness and reduced dropout rates. The first category was a shared vision and goals along with dedicated, collegial teachers who expect all students to be successful. Other

categories were: school organization and policies that encourage academic achievement; flexibility and a lack of preoccupation with running a smooth ship; a strong basic and academic curriculum with student grades based on a large sample of student work; a widely-shared school culture that supports respect for individuals, provides safety, and places priority on academic work; and a school-community relationship that is supportive due to a positive image of the school in the community.

Leadership

School leaders seeking to improve schools for students with special needs will nurture the norms of the school culture that support lasting school improvement (Dimock, 1992). Fullan (1992) noted that developing collaborative work cultures to help staff deal with school improvement efforts is a major responsibility of the principal. The school principal is the key instructional leader that must communicate the vision and purposes of the school. The principal's role is to lead and manage change focused on improved student results.

The degree to which the superintendent supports school improvement affects the ability of individual schools to increase student achievement (Wimpelbert, Teddie, & Stringfield, 1989). The superintendent and central office supervisors are key figures in stimulating and facilitating efforts to maintain and improve the quality of instruction (Everson, Scollay, Fabert, & Garcia, 1986; Firestone & Wilson, 1991; Patterson, Pajak & Glickman, 1989; Pink, 1990; Purkey & Parker, 1986). Fullan (1991) indicated that teachers do not take change seriously unless central administrators demonstrate through actions that they should. Levine (1991) has noted that the success of an effective school program and improved student achievement depends on a directed autonomy which is a mixture of autonomy for participating staff and control from the central office (p. 392).

School Size

Achievement

The school size-achievement relationship is not clear, although there is considerable research that indicates smaller schools facilitate higher student achievement. Some of the student achievement research has found no difference between the achievement levels of students in large and small schools (see for example, Darling-Hammond, 1997; Fowler, 1992; Gregory 1992; Haller, Monk, & Tien 1993; Howley 1996; Huang & Howley 1993; Lee, Byrk, & Smith,1993; and Monk, 1987).

There are, however, a number of researchers who have concluded that increased student achievement correlates with smaller schools (Bates, 1993; Eichenstein, 1994; Kershaw and Blank, 1993; and Walberg, 1992). Several researchers have found that small school size tends to promote a sense of community in the school (Barker & Gump, 1964; Bryk & Driscoll, 1988; and Pittman & Haughwout, 1987). Wehlage, Ruter, Smith, Lesko, & Fernandez (1989) studied various structural characteristics in common with schools that have been successful with at-risk students. A small school with less than 500 students was one of these characteristics. These researchers found that

smaller size promotes collegiality, makes democratic governance easier, and fosters the consensus-building that sustains commitment to school goals.

Student Attitudes and Social Behavior

The research on student attitudes and social behavior overwhelmingly favors small schools over large ones (see for example: Bates 1993; Gregory 1992; Howley 1996, 1994; and Schein 1985). The research linking school size to social behavior has investigated everything from truancy and classroom disruption to vandalism, aggressive behavior, theft, substance abuse, and gang participation.

Other Benefits

Another important benefit of small schools, supported by a number of researchers, includes greater and more varied participation in extracurricular activities by students in schools (Fowler, 1995; Hamilton, 1993; Howley 1996; and Kershaw & Blank, 1993). Students in smaller schools also have higher attendance rates than those in large schools (Fowler, 1995; Howley, 1994; Kershaw & Blank, 1993; and Walberg, 1992). Small schools also have greater holding power (lower dropout rates and increased graduation rates--see Gregory, 1992 and Walberg, 1992). Pittman and Haughwout (1987) estimated that the dropout rate increases one percent for every 400 student enrollment increase in the high school population.

Bryk and Thum (1989) also found that the effects of school size on absenteeism and dropout were substantial "...mostly indirect, acting to either facilitate (in small schools) or inhibit (in larger schools) the development and maintenance of a social environment conducive to student a facilitate engagement with the school" (p. 26). Fowler and Walberg (1991) carried out a study involving 293 public secondary schools in New Jersey and found that increased school size has negative effects upon student participation, satisfaction, and attendance, and it adversely affects the school climate and a student's ability to identify with the school and its activities.

Meir (1996) reported other benefits of small schools include: greater sense of belongingness and less alienation, enhanced student perceptions, more positive interpersonal relations, better teacher attitudes, governance that is manageable, respect by people who know each other, simplicity (complex bureaucracy leads to simplifying or standardizing the students, teaching a one-size fits all curriculum to more easily grade, measure, and categorizing the students), increased safety, increased parent involvement, accountability that stresses walking around the school, and increased listening to other teachers and to the students.

A study involving 1,297 high school students in Idaho (Page, 1990) found those who attended medium-size schools (500-1,000) were significantly more lonely than those attending small and large schools. A second study conducted by Page (1991), involving 12 high schools in Idaho, found students in large schools (excess of 1,000) were significantly more likely to drink alcohol, and use smokeless tobacco or marijuana than other students.

Gottfredson (1985) examined the effects of school size on school disorder and found that large schools tend to be characterized by a lack of communication between teachers and administration and confusion regarding school policies. This can lead to school disorder because teachers lose confidence in the administration and feel ineffective.

Class Size

The debate over class size has been ongoing. There is currently considerable interest within the states in reducing class size in an effort to improve student results. McCrobbie, Finn and Harman (1998) reported that at least half the states and a number of school districts have enacted or are considering some form of class size reduction. Although many studies are cited within the general education literature, Ahearn (1995) reported a striking contrast between the amount of literature available on class size in general education versus special education (i.e., there have been very few studies involving students with disabilities).

The most frequently cited class size study is Glass and Smith's (1978) meta-analysis of the findings of over 80 empirical studies. They concluded that reduced class size can be expected to produce increased academic achievement. Further, the major benefits from reduced class size are obtained as the size is reduced below 20 pupils.

Several years later, Robinson (1990) synthesized a much larger set of studies and found that the results were mixed. However, small classes were found to be most beneficial in reading and mathematics in the early primary grades, and students who were economically disadvantaged or from ethnic minority groups benefitted more in smaller classes.

A review of additional literature has generally found positive effects of smaller class sizes (Conley, Barbarach, & Bauer, 1989; Finn, 1998; Gottfredson & Diager, 1979; Greenwald, Hedges & Laine, 1996; Lee, Byrk, & Smith, 1993; Lee & Smith, 1994, 1995; McCrea, 1996; Robinson, 1990; Slavin, 1986; and Wenglinsky, 1997).

An example of this work is a review of 100 studies conducted by Robinson (1990 in McCrea, 1996) in which the following conclusions were made:

- Most promising effects of class size reductions occurred in grades K-3.
- Research provided little support that decreasing class size will, by itself, improve student learning.
- Most positive effects on pupil learning occurred in grades K-3 in reading and mathematics, particularly in classes of 22 or fewer students.
- Studies which examined student attitudes and behavior found the most favorable effects of smaller classes in primary grades.
- Smaller classes positively affected academic achievement of economically disadvantaged and ethnic minority students.
- Class size had little impact with classes with 23-30 students.

- Little increase, if any, in pupil achievement can be expected from reducing class size if teachers continue to use the same instructional methods and procedures in the smaller classes that they used in larger classes.
- Reductions in class size had small positive effects on achievement in comparison to many less costly learning interventions and strategies.
- Research indicated that class size reductions should be targeted to specific groups of pupils for specific purposes.
- Teachers should receive training and resources they need to make the most of the learning opportunities in smaller classes

Project STAR has been the largest, longest-lasting, and the most controlled study to date on class size, showing that bringing class size specifically down in the primary grades had positive effects on student achievement in all subject areas. The STAR Project studied more than 3,000 K-3 students in Tennessee schools from 1985-89 (Mosteller, 1996). McCrobbie, Finn, and Harman (1998) reported that the Project STAR research identified certain conditions critical to obtaining the positive effects of small classes. These crucial conditions included an adequate supply of good teachers (e.g., state certified and qualified to teach in their assigned grades), sufficient classroom space, a representative student mix in each class, and teacher access to adequate materials and services. Further, this research indicated that when classes are smaller, teachers spend more time on instruction and less on classroom management. Limited observations of 52 of STAR's 2nd grade classrooms showed that teachers in smaller classes could better monitor student reading progress and were more consistent in managing behavior. Another finding within the STAR research was that the defining feature of success is smallness, and that grouping strategies in large classes cannot achieve the same student benefits. In reporting the STAR research, McCrobbie, Finn, and Harman (1998) concluded that the greater the class size beyond 17, the less likelihood that the student outcomes will be as positive. Earlier research by Achilles and Kiser-King (1994) suggested that the most dramatic gains occur when class size shrinks to 15 or below.

Mosteller (1996) reported on follow-up data of the Project STAR that had the following findings:

- The percentage of small class (13-17) students who had been held back before grade 10 was half that of their counterparts in the regular groups (22-25) -17 percent versus 30-44 percent;
- Those from small primary grade classes outscored the others in high school English, math, and science by more than 10 points;
- Students in the small-class group had taken significantly more advanced courses, such as algebra II, calculus, advanced placement English, and foreign languages; and
- The small-class group had consistently fewer suspension days as high schoolers, and had fewer absences.

A smaller study in North Carolina conducted by Egelson, Harman, and Achilles (1996) found that the main benefits occur in the first year a student is in a small class and are sustained or increased slightly following the first year. Krueger (1998) provided an explanation that attending a small class in the lower grades may result in a one-time school socialization effect that

permanently increases student achievement levels. In addition to student academic achievement gains, research reported by Finn and Achilles (1998) suggested that small classes in the primary grades reduces the need for special education, grade retention, and disciplinary measures, and increases the likelihood of high school graduation, which has student as well as economic benefits. Achilles (1977) reported that minority students and students of low socioeconomic status get substantially larger benefits from attending smaller classes than do other students.

The Virginia State Department of Education (1996) investigated students with specific learning disabilities (SLD), serious emotional disturbances (SED), and educable mental retardation (EMR) to determine if class size and class mix influence educational outcomes. A total of 110 students in 12 classrooms were included in the sample.

- Student achievement is positively affected by class size.
- Students in single disability classes appeared to have higher reading, math, and social studies achievement than students who were mixed with other disabilities.
- The area of reading was affected more adversely than mathematics achievement,
- Larger classes adversely affected elementary students more than secondary students.
- The effects were the same for students in resource rooms or in self-contained settings, and class size affected students with EMR, EBD, and LD about the same.
- Teachers (n=over 3,000) reported using an equal variety of teaching methods in large and small classes alike.

A review of six research studies (McCrea, 1996) relating to class size and special education found:

- The maximum student to teacher ratio in special education was usually 15:1; students are generally grouped by academic performance, not by their educational and management needs.
- Smaller classes provided better environments for learning, especially at the elementary level.
- Student achievement and behavior was affected negatively by increased class size.
- Class size was impacted by other variables, including use of paraprofessionals and teacher experience.
- There was no one best teaching methodology to assure academic success.

Thurlow, Ysseldyke, and Wotruba (1993) found both qualitative and quantitative differences in various size groupings for students with disabilities. Fewer incidents of inappropriate behavior, increased amount of time on academic tasks, and increased student academic responses were found to be associated with lower student-teacher ratios.

In an earlier study involving 139 mainstreamed elementary students (grades 1-6, most with learning disabilities), Thurlow, Ysseldyke, and Wotruba (1988), examined the impact of varying student-teacher ratios on task completion and success, student instructional time, and quality of instruction in special education classes. Differences were not found in measures of task completion and task success due to the very high completion and success rates for all students in all groupings.

However, students in lower ratio groupings (1:1 and 3:1, rather than 6:1, 9:1 and 12:1) spent more time in active academic responses and academic engaged time, including writing, reading aloud, talking appropriately, and answering and asking questions. Also, teachers with lower ratios more often checked for student understanding, and provided greater task relevance, more feedback, and more adaptive instruction.

Although many general and special education studies have found a positive link to improved student results, it should be noted that Hanushek (1998) reported that a review of approximately 65 class size studies indicated that expenditures such as reduction of student-teacher ratio were not related to student achievement. Finn (1998) also indicated that the state of research with respect to small classes in the upper grades is fragmented and even contradictory.

Assessing the cost effectiveness of reducing class size is complex because of other interrelated variables involved including teacher salaries and teacher qualifications as indicated in Figure 1, page 11. Other variables to be considered that relate to the impact of class size include sufficient space, needed instructional materials and technology, and the benefits of supplemental programs such as special education and Title 1. Proponents of lower class size argue that small classes may reduce the need for more costly services such as special education and Title 1. Other researchers such as Finn (1998) have suggested that even the strong findings of Project STAR leave the question open whether the benefits of small classes offset the costs.

Physical and School Arrangements

The physical structures of schools may facilitate or impede change and impact student outcomes. In their study of urban school change, Louis and Miles (1990) cite constraints of the school's physical plant as a major source of implementation problems. Physical arrangements can contribute to the physical and mental isolation of teachers. Lortie (1975, cited in Fullan, 1991) found, in a study of 6,000 teachers, that the cellular organization of schools keeps teachers physically apart from other professionals in the school. This isolation then impacts teacher attitudes and limits the relationships between teachers, students, administrators, and the community. Yet these relationships are essential factors to ensure student achievement.

Dimock (1992) reported that structures in the school that contribute to teacher isolation and the feeling that the individual cannot make a difference are barriers to school improvement efforts and positive student change. Physical arrangements can also contribute to student feelings of isolation and alienation which can contribute to students dropping out of school. Lawton, Leithwood, Batcher, Donaldson, and Stewart (1988) argued that the school physical and programmatic arrangements needed to change, rather than the students needing to fit into the school efforts and setting. Fullan (1991) found that students' active involvement is essential to successful school improvement and student outcomes.

Schwartz (1995) indicated that schools should have enough physical space to accommodate all their students safely and an adequate number of teachers and classrooms to ensure optimum class size. In addition, the school building should be clean, safe from hazards, and in good repair.

Fiscal Resources

Fiscal resources are an important aspect of organizational capacity and usually the first factor mentioned in discussions of educational inputs. Fiscal resources involve teacher and other staff compensation, student-teacher ratios, caseloads for other staff, and time for school personnel to collaborate in planning, assessment, and other tasks.

The educational literature reveals a long-standing controversy over the influences of fiscal inputs on school quality and student outcomes. The Coleman Report (Coleman, Campbell, Hobson, McParland, Wood, Weifeld, & York, 1966) is often cited as the first study that related school district expenditures to student performance, although its findings have been disputed by some researchers. Research on this topic has produced contradictory findings. For example, some studies conclude that there is no relationship between fiscal resources and educational quality. Critics say that increases in school expenditures are often applied toward vague administrative functions and goals rather than being directly targeted for improving student outcomes. Hanushek (1987) found fault with state finance programs that are based on overall resources for they often penalize school districts for saving money or for organizing schools in nonstandard and creative ways to better meet student needs. Funding policies also sometimes reduce or remove funds when student outcomes improve.

Abelmann and Kenyon (1966) provided the following lessons learned from their case studies:

1. Teachers should be involved in the development of an incentive system.
2. Rewards should be linked to individual student progress.
3. Inequities exist among schools regarding their capacity and access to knowledge.
4. The reward process should not be left up to school level staff--the incentives should be clearly tied to school improvement.
5. Incentives should be tied to clear goals within a reasonable time frame; and
6. Teachers need assurance in the promises made and the long-term stability of change efforts.

Some twenty years later, Hanushek (1987) reviewed 65 studies and made a strong case for the premise that expenditures were not related to student performance. Some studies found a negative correlation between expenditures and student performance. In a later review of 400 studies of student achievement, Hanushek (1987) concluded that there is not a strong or consistent relationship between student performance and school resources, at least after variations in family inputs have been taken into account. He further concluded that "added resources within the current organization and incentives of schools are neither necessary nor sufficient for improving student achievement. Instead, incentive structures that encourage better performance and recognize differences of students, teachers, and schools offer much greater likelihood of success than the centralized decision-making approaches currently prevalent (p. 141).

Other empirical support for the positive effects of spending more money (e.g., lowering class size or paying teachers more) has not resulted in appreciable improvements in education (see for example: Hanushek, Rivkin, & Taylor, 1996; Heckman, Layne-Farrar, & Todd, 1996; and Niskanen, 1989).

Other research has reached opposite conclusions. Sander (1998) examined the effects of expenditures per pupil and expenditure-related variables on academic achievement in Illinois. In this research, he found that in some cases expenditures per pupil and average teacher's salary increase student achievement. He also found that a ten percent increase in per pupil spending is associated with a two percent increase in test scores. In addition, Hedges, Laine, and Greenwald (1994) re-analyzed the data that was used by Hanushek in his 1987 review and found significantly different results (e.g., a positive correlation between spending and student achievement).

Other empirical support for the view that there is a positive effective of increased spending resulting in improved student outcomes include Akerhielm (1995); Card and Kruger (1995); Figlio (1997); Ferguson (1991); Ferguson and Ladd (1996); Sander (1993); and Word (1990).

The National School Boards Association (NSBA, 1998) also reported on other studies that have examined state-level NAEP scores, state-level Stanford Achievement Test (SAT) scores, and district-level scores in relation to educational spending. All found a relationship (i.e., more money was associated with higher achievement). For example, one study cited in the NSBA report found that for every $1,000 difference in state spending on education, there was a 15-point difference in SAT scores (after SAT participation rates had been statistically adjusted to make them comparable across states).

The Committee on Economic Development (CED, 1994) concluded that money matters, but only if schools are organized to use it effectively to promote achievement. The Committee concluded that superintendents and school boards must ensure that sufficient funds get to the classroom to improve learning. The CED also indicated that schools should have greater control of resources. In addition, increases in resources should be tied to progress toward agreed-upon achievement goals that take into account the different costs needed to educate students of different backgrounds and needs. Card and Krueger (1995), however, summarized the literature by noting that the available evidence is not clear or conclusive.

SELECTED PROCESS FACTORS

Standards-Based, Comprehensive, and Integrated Curriculum

The publication of *A Nation at Risk* in 1983, with its recommendations for more emphasis on the four core subjects--English/reading/language arts, mathematics, social studies, and science, focused national attention on strengthening the core academic curriculum of schools (National Commission of Excellence in Education, 1983). This report indicated that secondary school curricula have been "homogenized, diluted, and diffused to the point that they no longer have a central purpose" (National Commission of Excellence in Education, 1983, p. 18). As a result, organizations such as the National Council of Teachers of Mathematics (NCTM) and the National Academy of Sciences (NAS), to name a few, have developed national standards for their subject areas and have been working over the past decade to have these standards implemented as a part of every school's curriculum.

Correspondingly, there have been many policy changes aimed at increasing school time and content on core academic subjects, some of which adjust the structure of the curriculum. For example, many high schools that before had either no graduation requirements or had more liberal policies have adopted a more intensive core curriculum of 4 years of English; 3 years each of mathematics, social studies, and science; 2 years of a foreign language; and l/2 year of computer science (Education Commission of the States, 1993).

Although some of the overall curriculum requirements have focused primarily on the secondary level, various councils and centers have created elementary school standards, as well. The organizations that have been developing individual course standards have divided students into three groups: kindergarten through 4th grade, 5th through 8th grade, and 9th through 12th grade. This division and the standards correspond to one of the National Education Goals established by President Bush and the nation's Governors during a 1989 summit meeting, which called for American student to leave grades 4, 8, and 12 having demonstrated competency in challenging subject matter, including English, mathematics, science, history, and geography (National Education Goals Panel, 1995).

Several studies have shown that the more content students are taught early on, the more they learn and the better they perform on later achievement tests (Medrich and Griffith, 1992).

As a result of these early efforts, Wilson and Rossman (1993) found that after states raised graduation requirements, schools offered more academic courses, particularly in mathematics and science. Second, more students were actually enrolled in the courses. These findings were confirmed by data from the National Center for Education Statistics (NCES), which found that the percentage of all graduates completing the minimum academic courses recommended in *A Nation at Risk* increased from 13.4 percent in 1982 to 39.8 percent in 1990 (Wilson and Rossman, 1993). They also examined the effects of the new graduation requirements on minority and at-risk youth and found that minority youth earned fewer total credits, enrolled in fewer advanced courses, failed more courses, and earned more practical arts credits.

Today, virtually all states have had a focus on developing state standards in various academic course areas. Standards-based reform has been a strategy to improve student academic achievement by setting rigorous expectations for performance in academic subjects (McLaughlin and Shepard, 1995). The National Education Goals Panel, created through Goals 2000, described two interdependent standards: content standards and performance standards. Content standards identify what the student is expected to know after participating in a particular course of study. Performance standards indicate how well the student has learned the material (Anderson, et al., 1996).

Coyle-Williams (1990) reported on various research studies that indicated a need to expand educational reform efforts beyond the college bound population in order to have a comprehensive, balanced curriculum. The need for an integrated vocational and academic curriculum was discussed.

Schwartz (1995) reported the need for schools and communities to take a comprehensive approach to student health and social service needs. Strategies should include immunization; physical and mental health care services; protection from unsafe and violent environments; and substance abuse, sex, and pregnancy counseling. Schools or communities should also ensure that teachers, counselors, social workers, and other professionals work together to best meet students' needs and to deliver comprehensive services (Jackson, 1993 and Berry, 1993).

In addition to the need for a comprehensive curriculum, there has been recent interest in an integrated curriculum. An integrated curriculum links subject areas with meaningful learning experiences that develop skills and knowledge, while leading the student to an understanding of conceptual relationships (Lake, 1997). Fogarty (1991) described levels of curricula integration as fragmented, connected, nested, sequenced, shared, webbed, threaded, integrated, and immersed. The research linking curriculum integration to student outcomes is limited, with little data on increased academic performance. However, MacIver (1990) found that students developed team spirit within integrated programs and improved their attitudes and work habits. Vars (1987) also reported that motivation for learning was increased when students work on "real" problems which is a common element in integrated curricula. When students are actively involved in planning their learning and in making choices, they are more motivated and behavior problems are reduced. Jacobs (1989) reported that an integrated curriculum is associated with better student self-direction, higher attendance, higher levels of homework completion, and better attitudes toward school. Students are engaged in their learning as they make connections across discipline and with the world outside the classroom. In addition to student impacts, MacIver (1990) found that teachers appreciate the social support of working together and feel that they are able to teach more effectively when they integrate across subjects and courses. Teachers were found to discover new interests and teaching techniques that revitalize their teaching.

Tailored, Interactive Instruction

In addition to research cited in other sections of this report that impacts instruction (e.g., grouping, scheduling, technology, and parent involvement), there is much research regarding effective instructional strategies. For example, there is consistent research evidence that, in order to enhance student learning, instruction must be provided at a level of difficulty appropriate to the individual student. In other words, the curriculum subject matter provided must be matched to the

readiness of students to learn it (Walberg, 1992, as described in Kane, 1994). Various studies have shown that appropriate instruction consists of learning activities that are geared to the learners' abilities and background, such that students are both challenged and able to experience success. Instructional practices that promote student achievement include timely and specific feedback, attention to prior learning, and active participation by the teacher (Kane, 1994).

In general, instructional strategies thought to be effective have moved away from passive teacher-lecture/student learning modes of instruction, to a more active array of learning activities. McPartland and Nettles (1991) reported that having a personal connection with a teacher during the instructional process can make a difference if a student succeeds or fails. Various instructional strategies such as teacher mentors, race-sex role models, adult and cross grade peer tutors, and integrated technology have been found to be related to increased student success in the classroom (McParland & Nettles, 1991).

CPRE (1995a) reported that staff in exemplary schools are actively involved in their own learning. Teachers created nurturing learning environments that facilitated students working independently and in heterogeneous, cooperative groups. Instruction often consisted of students engaged in self-directed, hands-on experiential and project-based learning, including inquiry and activity discovery methods. Overall, curricular and instructional strategies emphasized in-depth learning across subject areas and disciplines.

Echevarria and McDonough (1993) reported on the effectiveness of instructional conversations as an interactive instructional approach for students with disabilities as well as for culturally and linguistically diverse students. They identified several features of an instructional conversation approach: having a thematic focus for instruction; providing the student with pertinent background knowledge related to the content; direct teaching of a skill or concept; using elicitation techniques to actively involve the student; promoting the student's use of text or pictures to support a position; making use of other conversational elements; having a non-threatening atmosphere; and encouraging general participation of the students.

Time for Learning

Carroll's work (1963) was the beginning of more recent inquiry into the effects of time factors in the learning process. In his model, time needed for a given student depended upon five factors: aptitude, ability, perseverance, opportunity to learn, and quality of instruction. Cotton and Wikelund (1997) conducted a review of 57 research studies concerned with the relationship between student outcomes of achievement and attitudes with one or more of the following educational time factors:

- allocated time or the amount of time specified for an learning activity,
- engaged time or time-on-task when students are paying attention to a learning task or attempting to learn,
- academic learning time when students are working on tasks at appropriate levels of difficulty with high levels of success, and
- dead time when there is nothing students are expected to be doing.

Following is a summary of Cotton and Wikelund's 1997 research review:

- There were large differences in instructional time allocations across schools and classrooms.
- The ratio of school time to instructional time and the ratio of classroom time to time-on-task was shockingly low. Researchers such as Seifert and Beck (1984); Anderson (1983); Fredrick, Walberg, and Rasher (1979) found that students spend only about half their in-class time actually engaged in learning activities.
- A few studies (e.g., Kidder, O'Reilly, & Keisling, 1975; and Wiley & Harnishchfeger, 1974) found a strong positive relationship between quantity of schooling and achievement. Some investigators such as Smith (1979) and Borg (1980) found no relationship. However, most researchers and reviewers identified a weak, non-statistically significant, but positive relationship of increased time spent learning to student achievement.
- Virtually all investigators found a positive relationship between time-on-task and student achievement. This relationship was stronger than the allocated time-achievement relationship, but still modest. Time-on-task in interactive activities with a teacher produced greater achievement and better attitudes than time-on-task in seatwork. Specific interactive activities identified by researchers as beneficial uses of student and teacher time included: the use of immediate feedback and correctives in classroom lessons, focused questions, praise and reinforcement, listening and thinking during classroom interactions, and discussion/review, reading aloud, verbal drill, and practice.
- Increasing time-on-task reduced the anxiety and enhanced the achievement of highly anxious students. Increasing time-on-task was also found to be more beneficial in the more highly structured subjects, such as mathematics and foreign languages, than in the less structured ones, such as language arts and social studies.
- Most investigators found a strong positive relationship between academic learning time and both student achievement and attitudes.
- Seatwork was found to be most beneficial to students when teachers prepared activities carefully, managed seatwork efficiently, supervised it actively, and gave students help and feedback so that other students were not disturbed.
- The success of mastery learning programs in promoting learning gains was due largely to the extra amounts of quality time-on-task expended by students in these programs, and particularly by middle-and lower-ability students.
- Appropriate kinds and amounts of homework raised achievement levels for students above the primary grades. Buttler (1987); Holmes and Cross (1989); and Hossler, Stage, and Gallagher (1988) (all in Cotton and Wikelund, 1997) found that homework is most beneficial when it is relevant to learning objectives, appropriate to students' ability and maturity levels, assigned regularly, assigned in reasonable amounts such as 30 minutes per subject per day, well explained and motivational, collected and reviewed during class time, used as an occasion for giving feedback to students, and supported by parents with study space and signing off on assignments.
- Higher-ability students benefitted from increases in allocated and/or engaged time very slightly, if at all.

- Significant increases in the quantity of schooling would be needed to bring about even modest increases in achievement. The costs associated with extending the school day or year were, therefore, not found to be justifiable.
- Increasing time allocations for particular subjects within classrooms was beneficial to students needing additional help if that time was devoted to the use of effective instructional strategies.
- While some students appeared to benefit from increased learning time, Hossler, Stage, and Gallagher (1988) warned that requiring students to expend more time on learning activities may have some undesirable consequences for at-risk students.
- Achievement benefits resulted when teachers worked with their students in such a way as to reduce the time needed for learning (e.g., providing rewards for passing tests on the first try, dramatizing or enthusiastically communicating about learning tasks).

Similarly, Dale (1995) reported a definite relationship between the amount of time the student spends learning and school achievement. However, she reported that a third of high school juniors still do less than a half an hour of homework a day. The television viewing hours of American students far outpace their international counterparts. Elementary school students in America spend approximately 900 hours a year in front of their teachers and between 1,200 and 1,800 hours in front of the television (Barber, 1993). Roughly 35% of 10th graders miss 5 or more days in the first half of the school year (National Center for Education Statistics, Digest of Education Statistics, 1993).

Grouping

Ability Grouping

Ability grouping of students is one of the oldest and most controversial issues in elementary and secondary schools. Hundreds of research studies have examined the effects of the two most common forms: between-class and within-class ability grouping. In theory, ability grouping allows the teacher to increase the pace and reach the level of instruction for high achievers, while providing more individualized attention for low achievers. One of the arguments against ability grouping is that the practice creates classes or groups of low achievers who are deprived from the example and stimulation provided by high achievers. Labeling students also may communicate self-fulfilling low expectations. Slavin's 1986 review of the literature supported several findings about grouping and tracking:

- The ability-grouped class assignment is a plan that places students in a self-contained class on the basis of ability or achievement. Evidence suggested that ability-grouped class assignment does not enhance student achievement in the elementary school.
- The plan for regrouping students for reading and mathematics, but assigning students to heterogeneous classes for most of the day was found to improve student achievement. However, the level and pace of instruction must be adapted to achievement level. Furthermore, students should not be regrouped for more than one or two subjects.

- The Joplin Plan assigns students to heterogeneous classes for most of the day, but regroups them across grade levels for reading instruction. Strong evidence was found that the Joplin Plan increases reading achievement.
- The nongraded plan includes a variety of related grouping plans that place students in flexible groups according to performance rather than age--thereby eliminating grade-level designations. Well-controlled studies have generally supported the use of comprehensive nongraded plans to increase student achievement.
- In within-class ability grouping, teachers assign students within their classroom to one of a small number of groups based on ability level, in which students work on different materials at their individual rates. Too few studies have been conducted on the use of within-class ability grouping in reading to support or challenge its effectiveness. Research on within-class ability grouping in mathematics, however, clearly supported the practice, especially when only two or three groups are formed. The positive effects were slightly higher for low-achievement students than for average or high achievers. Finally, only a small number of groups should be formed in within-class ability grouping to allow the teacher adequate direct instruction for each group.
- In general, students should identify primarily with a heterogeneous class and only re-grouped by ability when reducing heterogeneity was found to be particularly important for learning such as in reading or math instruction. In addition, student heterogeneity should only be reduced in the specific skill being taught, not in IQ or in overall achievement level.
- Grouping plans should allow for frequent reassessment of student placement and easy reassignment based on student progress. In addition, the level and pace of instruction should be varied according to the level of student readiness and learning rates in regrouped classes.

Grouping children in classes with a wide age range cannot by itself yield the benefits of cross-age interaction and multi-age grouping implied by research. If these benefits are to be realized, the curriculum must be modified with a variety of activities to allow children to work together on projects in small multi-age groups in which each individual can contribute to the total effort (Katz & Chard, 1989; Blumenfeld, 1991).

Following are other key research findings regarding ability grouping:

- African-American and Hispanic children who have been clustered in low ability classes differed in important ways from their more advantaged and white peers. By the time students reach secondary school, their science and mathematics experiences have been found to be strikingly different (Oakes, Ormseth, Bell, & Camp, 1990).
- Students in low ability tracks tended to receive lower-quality instruction. Their instruction covered less content, involved more drill and repetition, and placed more emphasis on classroom management tasks (Dreeben & Gamoran, 1986; Gamoran & Mare, 1989; and Veldman & Sanford, 1984--all cited in Secada, 1992).
- Students in low-ability tracks had difficulty moving out of low tracks into higher tracks (Century, 1994).

- Students placed in high-end ability groups benefitted most from both tracking and ability grouping (Secada, 1992). Specifically, gifted students benefitted from working together for sustained periods of time (Kulik & Kulik, 1988).

Peer and Cross-Age Tutoring and Cooperative Learning Groups

Repeated studies have shown that peer interaction through peer and cross-age tutoring and in cooperative learning groups is conducive to early achievements: "children's understanding of fairness, their self-esteem, their proclivities toward sharing and kindness, their mastery of symbolic expression, their acquisition of role-taking and communication skills, and their development of creative and critical thinking" (Damon & Phelps, 1989, p. 135). Other researchers that have reported the benefits of peer and cross-age tutoring and cooperative learning groups include Martino, 1994; Greenwood, Carta, and Hall, 1988; Berliner and Cassanova, 1988; and Jenkins, 1987.

Inclusive School Practices

Consistent with the least restrictive environment provisions of IDEA, the term inclusion has appeared as a set of practices whereby students with disabilities are educated in their home school and with students without disabilities to the extent possible. Inclusion is based on the belief that all children can learn and that diversity within the school enriches all students. Although there are many disagreements as to what inclusion is, general features of inclusive schools include:

- Teachers are using heterogeneous and cooperative group arrangements of students (Sapon-Shevin, 1994).
- As a result of having high expectations for all students, students with disabilities are provided individualized approaches to curriculum, assessment, and instruction including nonbiased assessment and multiple approaches to intelligence (Armstrong, 1987).
- Staff, students, parents, and the community are collaborating with one another in the design and delivery of effective education for all students (Villa & Thousand, 1992; Thousand, Villa, & Nevin, 1994).
- Teachers and other professionals are giving students the opportunity to think and be creative (Costa, 1991).
- School staff are facilitating students' social skills in developing relationships and friendships (Noddings, 1992).

Because of the extent to which students with disabilities are fully included within general education classrooms, there are many opinions regarding the benefits of inclusive school practices. One review of the literature on the efficacy of inclusive practices conducted by Rossman and Salzman (1994) presented the following findings:

- Students with disabilities in inclusive settings spent more time connected to general education (Chase & Pope, 1993 in Rossman & Selzman, 1994).
- Students in inclusive programs made academic gains regardless of the labeled disability.

- Integrated students with severe disabilities had greater success in achieving eight IEP goals than did matched students in traditional programs.
- Positive social effects were found for students in inclusive programs.
- Evidence was found of repeated instances of "bubble kids"--children in general education classrooms who were integrated, but isolated or separated (Ferguson, 1992).
- There was parent support for the inclusive program, particularly for students with disabilities. Similarly, parents of integrated students labeled as mentally retarded were generally satisfied with the inclusive program, with 85% indicating they would choose an integrated program over a more traditional model (Marwell, 1990 in Rossman & Selzman, 1994).
- Co-teaching between general and special education teachers was found to increase student attitudes toward self, peers, and school.
- Teacher support varied somewhat, with a trend toward positive support of inclusive programs (Chase & Pope, 1993 in Rossman & Selzman, 1994).

Scheduling

Spady (1988) reported that the focus on time in schools (e.g., organization around the calendar and the clock), along with the legal mandate for teachers to keep students for fixed periods of time, can result in carrying out unproductive teaching periods of "putting in time" and "covering material".

Cuban (1989) discussed the inflexible structure of the graded school. He described the graded school as a source of academic failure among at-risk students and called for the re-design of the school structures.

Shanker (1989) expressed concern that many secondary students are forced to cope with a structure that no worker in the real world needs to have:

> They're put into a room to work with two or more of their peers, with whom they cannot communicate. The teacher gives them their tasks and, when the bell rings 40 or so minutes later, they have to gather up their belongings and head to another "work station" for a whole new set of tasks with a new "supervisor" who has a different personality and, very likely, a different method of operation. This routine is repeated six or seven times a day. All youngsters are expected to have sufficient motivation and self-discipline to get down to serious work on day one in anticipation of a "reward:" far down the road–something most adults need all their fortitude to accomplish. (p. 3)

Canady and Rettig (1995) reported on the power of innovative scheduling to reach improved program and student outcomes. They concluded that creative scheduling can have the following benefits:

- result in more effective use of time, space, and resources (human and material);
- improve instructional climate;
- help solve problems related to the delivery of instruction; and
- assist in establishing desired programs and instructional practices.

A number of elementary schools have adopted parallel block scheduling (e.g., base teachers to rotate flexible teaching groups and an extension center to provide re-teaching, reinforcement, opportunities for practice, special education, and other supplemental programs) to reduce instructional fragmentation for students, improve discipline, and provide regularly scheduled and flexible opportunities for extended learning enrichment (Canady, 1988; Canady & Reina, 1993).

Canady and Rettig (1995) reported on the benefits of middle school scheduling using high school block scheduling models such as the Day l/Day 2 schedule in which students have fewer classes daily, and fewer class changes. They reported that another scheduling option at the middle school that has proven to be beneficial for students is assigning students regular classes for 35 days and then 5 days for re-teaching and/or enrichment each semester. Then the students continue general education classes for 35days and end the semester with 15 days for extended learning time or enrichment/electives.

Canady and Rettig (1995) also discussed high school scheduling approaches that have been found to be beneficial to students including block schedules to address curriculum fragmentation, alternate-day schedules, the 4x4 semester plans, and other variations. These plans have proven to have a positive effect on discipline. Canady and Rettig (1995) reported that there are many variations to scheduling at the elementary, middle school, and high school that have reduced curriculum fragmentation, discipline problems, and student failures (Canady & Rettig, 1995).

Technology

Learning technology has an enormous impact on student learning. CCSSO (1991) issued a policy statement regarding improving student performance through learning technologies. This policy statement indicated that learning technology encompasses a wide range of equipment and applications that directly or indirectly affect student performance. Learning technology ranges from simple telephones to complex networks of satellites, cable, and fiber optics that deliver interactive, multimedia learning opportunities. Technology offers information in a variety of formats (i.e., text, video, and audio) allowing students to use the medium that is the most effective for their learning. Technology allows teachers to give special attention to certain individuals without neglecting the progress of others who are successfully guiding their own learning. Technologies allow individuals or small groups to access fast sources of information. Technologies also control the pace and direction of instructional content, questions, and responses (CCSSO, 1991).

It has been well documented that technology can enhance student acquisition of discrete skills through drill and practice. Although controlled studies are limited, a range of assistive technology have provided tremendous benefits to students with disabilities. In its case studies of nine sites that have been using technology to restructure the classroom around students' needs and project-based activities, CPRE (1995) found that technology:

- Adds to the students' perception that their work is authentic and important;
- Increases the complexity with which students can deal successfully;
- Dramatically enhances student motivation and self-esteem;
- Making obvious the need for longer blocks of time;
- Creates a multiplicity of roles;
- Instigates greater collaboration; and.
- Gives teachers additional impetus to take on a coaching and advisory role.

Cotton (1997) analyzed 59 research studies documenting the relationship between computer-based learning and student outcomes (i.e., 18 research studies, 22 reviews, and 9 meta-analyzes of research studies). These 59 reports were concerned with the effects of computer-assisted instruction (CAI). The following conclusions were reached:

- The single best-supported finding in the research literature was the use of CAI as a supplement to traditional, teacher-directed instruction in producing superior student achievement to those obtained with traditional instruction alone. This finding held true for students of different ages and abilities and for learning in different curricular areas.
- When comparing achievement effects produced by all forms of CAI (sometimes alone and sometimes as a supplement to traditional instruction) as compared to the effects of traditional instruction alone, CAI was found to produce higher achievement than traditional instruction by itself.
- As well as enabling students to achieve at higher levels, researchers found that CAI enhances learning rate versus conventional instruction. While most researchers have not addressed how much faster CAI students learn, Capper and Copple's work (1984) concluded that CAI users sometimes learn as much as 40 percent faster than traditional, teacher-directed instruction.
- Students receiving CAI also retained their learning better, based on delayed tests.
- The use of CAI led to more positive student attitudes than the use of conventional instruction, as well as an increased locus of control, increased student attendance, increased motivation and time-on-task, and improved cooperative, prosocial behavior.
- CAI was more effective with younger versus older students, lower-achieving students than higher achieving, with economically disadvantaged versus higher socio-economic scale (SES) students, and with science and foreign languages, followed in descending order of effectiveness, by activities in mathematics, reading, and language arts.
- Students with disabilities had greater achievement levels with CAI than with conventional instruction alone.

- CAI was not found to be effective in English as a Second Language instruction and inconclusive regarding comparisons between males and females.
- CAI activities were at least as cost-effective as and sometimes more cost-effective than other instructional methods such as teacher-directed instruction and tutoring.

Cradler (1992) reviewed over 100 studies on the use of broader technology applications within schools and found that the effectiveness of technology tended to vary as a function of the curriculum content and instructional strategy delivered by the technology. Students achieved greater if the technology had maximum interactivity. He also found that educators that used educational technology became less directive and more student-centered in their teaching style. Teachers also had an increased emphasis on individualized instruction and spent more time advising students. Finally, their interest in teaching increased, there was more time experimenting with emerging technology, and their productivity was increased. In this research review, Cradler concluded that technology was related to increased student performance when interactivity and other important features of instructional designed were applied including teacher preparation, follow-up staff development, and ongoing staff development.

Despite the potential benefits of the use of technology in the classrooms, a recent report by Anderson (1995) showed how far the nation's schools are from being technologically supportive for students and teachers. While schools had 5.8 million computers in 1995 (about one for every nine students), fewer than half of the teachers used computers regularly for instruction. Anderson (1995) found that most school computers were outmoded. In 1994, 85% of the equipment installed in the schools could not make use of multimedia or connect to outside resources. During this time period, only 3% of classrooms had access to on-line databases. Anderson (1995) also found that 60 percent of instructional areas in schools had no telephone lines, and 87% did not have access to fiber optics or cable. Only one teacher in eight had a telephone in class, and fewer than 1% had access to voice mail. During 1994, 18 states required some technology preparation for a teaching license; however, only 10% of new teachers felt they were prepared to integrate new technologies into their instruction. In order to impact student outcomes, the Office of Technology Assessment recommended new visions for technology use that take into account new curricular and other possibilities, training and ongoing support for curriculum integration, increased teaching time to experiment with new technologies, share experiences with other teachers, and plan lessons using technology.

Parent, Family, and Community Involvement

Academic Achievement

There are literally hundreds of books, journal articles, and stand-alone reports on the subject of parent involvement in their children's education. In fact, parental involvement has long been recognized as an important indicator of a school's success. In a review of some 300 studies on home-school relations, Kellaghan, Sloan, Alvarez, and Bloom (1993) found that: "the home environment is the most powerful factor in determining the level of school achievement, interest in school learning, and the number of years of schooling" (p. 144-145). A research review conducted by Henderson & Berla (1994) of 66 studies, reviews, reports, analyzes, and books on parental involvement and another review of 49 research studies by Edge and Davis (1994) found that the

family makes critical contributions to student achievement from the earliest childhood years through high school.

Cotton and Wikelund (1997) synthesized 41 research studies, reviews, and program descriptions to determine the effects of parent involvement on student achievement and other student outcomes. Cotton and Wikelund found that the research indicated that the more intensively parents are involved in their child's learning, the more beneficial are the achievement effects. This holds true for all types of parent involvement in their child's learning and for all types and ages of students.

Research reviewed by Cotton and Wikelund (1997) as well as that conducted by Finn, 1998 and a study of 1,141 third-graders in Los Angeles by Clark (1992), all found that there were strong indications that the most effective forms of parent involvement are those which engage parents in working directly with their children on learning activities in the home (e.g., reading with their children, supporting their homework, or tutoring them using materials and instructions from the teachers). Research conducted by Tizard, Schofield, and Hewison (1982) found that children who read to their parents on a regular basis made greater achievement gains than children receiving an equivalent amount of extra reading instruction by reading specialists at school. In their research review, Cotton and Wikelund (1997) also found that the more active forms of parent involvement produced greater achievement benefits than the more passive ones (e.g., telephone calls, read and acknowledged written communications from the school, and attendance at parent teacher conferences).

Cotton and Wikelund (1997) noted that the research also showed that the earlier in a child's educational process parent involvement begins, the more powerful the effects were. Research studies that have compared parent involvement programs that include orientation/training components have indicated that there is greater effectiveness of parent involvement. However, Cotton and Wikelund (1997) provided a note of caution that a little training was better than a lot. Finally, in looking at the relationship of parent involvement to student achievement, they found that the most successful parent involvement programs offered a variety of ways for parents to participate.

Social Behavior

While not as extensively researched, Cotton and Wikelund (1997) found that parent involvement had positive effects on student attitudes and social behavior. Similarly to the relationship to student achievement, parent involvement of most benefit for improving student attitudes and social behavior was more active. They found that a variety of active forms of parent involvement seemed more or less equally effective in improving student attitudes and behavior. School personnel also benefitted from the improved rapport that accompanies parent involvement. Parent involvement also resulted in improved parent attitudes toward the school and improved parent self concepts.

Grade Level

Because there is more limited parental involvement at the middle school and high school levels, the majority of the research reviewed by Cotton and Wikelund (1997) was too limited to permit drawing any definite conclusions about its effectiveness at the middle school or secondary level. However, parent involvement appeared to be very beneficial in promoting positive outcomes with older students, as well (e.g., monitoring homework, assisting with postsecondary plans, and selecting courses).

More recent research conducted by Epstein, Simon, and Salinas (1997) described strategies in which *Teachers Involve Parents in Schoolwork* (TIPS) was shown to be effective in raising the writing skills of 683 middle school students from the fall to the spring. Increased parental participation in this program directly correlated with improved writing scores of their children. A study conducted by Sanders, Epstein, and Connors-Tadros (1998) of 826 adolescent African American students found that high school parents indicated that the stronger the high school's program of partnerships, the more positive the parents' attitudes were about the school.

Special Populations

Related to specific populations of students, Cotton and Wikelund (1997) found that children who are disadvantaged have the most to gain from parent involvement programs. The current use of a "deficit model," was cited by Cotton and Wikelund as detrimental to the development of positive relationships between the school, parents, and communities. Cotton and Wikelund also noted the significant involvement by parents of students with disabilities within the IEP process as well as the benefits of such active parental involvement.

Involvement in Governance

It was interesting to note that Cotton and Wikelund (1997) could not find examples of studies in which parent participation in school governance decision-making roles could be directly linked to improved student achievement, although some writers believe that such a relationship exists.

Impact of Home Literacy and Skills Training

A study (Azar, 1998) involving 531 children found home literacy environment also played a significant role in predicting scores on all academic skills except math. Home literacy environment included how often parents read to their child, how often the family used the library, and how much the child watched television. The more television a child watched, the worse his or her skills were. Benjamin (1993) reported follow-up studies of preschool participants who were at risk of failure when they enrolled in a family literacy program showed later school performance that was above average on variables such as academic achievement, motivation to learn, attendance, self confidence, and probable success in school. Ninety percent of the former preschool participants were not considered to be at-risk for school failure by their primary school teachers.

Home-School-Community Partnerships

Conditions beyond the school also have a profound impact on what students learn within the school. Community support is essential to support and strengthen families' abilities to contribute to their children's learning and to school activities. Mathews (1996) reported on research by the Kettering Foundation that reported a steady erosion of support for public schools. He argued that educators need to involve people in the community, not when plans have already been made, but in the planning and conceptualization of new directions.

In *Beyond the Classroom*, Steinberg (1996), found that school reforms are unlikely to raise student achievement unless parents and peers in the community are involved. His research showed that parents and peers, not educators, have the most influence on the student's classroom performance. Family and community factors in a child's life affect cognitive development.

Epstein, Clark, and Salinas, (Sanders (1997) reported on data from 39 schools in Baltimore City on the strength of their program of school, family, and community partnerships. These partnerships positively impacted attendance and standardized reading, writing, and math achievement test scores, as indicated by Maryland State test data. In grade 3, more students achieved satisfactory or had better scores on writing, reading, and math performance assessments. The effects of good partnerships were found to be stronger for writing and reading than for math.

Instructional Climate and School Culture

Research over the last 30 years has consistently shown that student results are better in schools where students are well known to their teachers (for reviews, see Braddock & McPartland, 1993; Darling-Hammond, 1997; and Lee, Bryk, & Smith, 1993).

Climate is a term that refers to the atmosphere in a school. It is made up of attitudes shared by members of subgroups, such as students, faculty, and staff, and by the school population as a whole (Gordon & Hymes, 1994). It is generally considered to be positive or negative, although aspects of a school climate can be affected without impacting the entire school. Climate affects the morale, productivity, and satisfaction of persons involved in the school. Some educators, including Gordon and Hymes (1994) describe climate as having four dimensions (academic, social, physical, and affective).

School climate has been found to positively correlate with student achievement (Crisci, Levine & Lezotte, 1995; Krug, 1992; Vander Sijde, 1988; and Villanova, 1982). Gonder and Hymes (1994) identified several variables associated with climate and culture for which there was much consensus in the literature. These included high student expectations, student centeredness, safe and disciplined schools, orderly atmosphere, focused mission, coherent plan, teacher efficacy, frequent monitoring of progress, rewards and incentives for teachers and students, positive physical environment, low sense of futility, and community support. As evidence of consensus among authors, Crisci, March, Peters, and Orrach (1988) cited a literature review from Robinson (1985) which identified the following attributes of school climate:

1. An orderly and business like atmosphere;
2. Firm, fair and consistent discipline;
3. A cooperative, congenial atmosphere;
4. Few classroom interruptions;
5. Parent involvement in the learning process;
6. Positive relationships with the school community;
7. Adequate and accessible materials and facilities; and
8. A well kept physical plant.

Various authors (Brandt,1996; Crisci, March, Peters, & Orrach,1988; Heneveld & Craig, 1995; Lezotte & Bancroft, 1985; and Weber, 1987) identified high expectations and/or community involvement as critical components of effective school climate.

Professional Development

Reform efforts across the country are dramatically raising expectations for students and teachers. To adequately respond to these efforts, teachers and other educators are being asked to master new skills and responsibilities and to change their practices to impact greater student outcomes. Teachers need to acquire new knowledge, skills, and methods of teaching. They are being asked to revise curriculum and implement new approaches to working with children. New forms of professional development are needed if student outcomes will be impacted. Teachers need professional development that extends far beyond the one-shot workshop and that allows follow-up opportunities to question, analyze, and change instruction (Darling-Hammond & McLaughlin, 1995).

There is a growing body of opinion among experts that the conventional forms of professional development are not effective and do not have a positive impact on teachers' practice (e.g., lectures, workshops and other conventional forms of information delivery and training that are top-down and isolated from classroom realities). Researchers, such as Corocan (1995), have reported that professional development programs typically have weak effects on practice because they lack focus, intensity, follow-up, and continuity. In many cases, neither individual nor organizational activities are closely linked to district goals for student performance. Even where there is substantive linkage, inconsistency and lack of follow-up weaken potential effects on practice.

The staff development research (Joyce & Showers, 1988) has provided compelling data on the relationship between training outcomes and eight specific training components: l) information, 2) theory, 3) demonstration, 4) theory and demonstration, 5) theory and practice, 5) theory, demonstration and practice, 7) theory, demonstration, practice, and feedback, 8) theory, demonstration, practice, feedback and coaching. The movement across these options shows greater knowledge and skill outcomes, with option eight providing the greatest outcomes.

Cassidy and Taira (1988, 1989) found that teachers indicated that the factors contributing to the greatest success were: a sound theoretical basis; experience and practice with the particular curriculum and instruction being adopted/adapted; a support system designed specifically to their

needs; convenience, with training during the school day and at their own site when possible; and training with no expense to the teachers.

In addition to the literature that is promoting whole-staff involvement, there is other literature that addresses professional learning community configurations. Peterson and Brietzke (1994) reported on the need for collegial and collaborative cultures that require both time and structured opportunities. Guskey and Peterson (1996) supported the creation of learning communities in smaller units such as a school improvement council. These various professional development approaches do not have a substantial or conclusive research base to understand how the contextual variables influence what would constitute the most effective approach. Whole school staff development can provide opportunities for learning new practices. However, smaller learning communities can provide practice and support and cause the learning to occur.

The Consortium for Policy Research in Education or CPRE (1995c) described additional new staff development options involving joint work in which there is shared responsibilities for tasks such as in team teaching, curriculum committees, or other jobs that create interdependence among teachers and require cooperation. Job enrichment refers to expanding teachers' work in ways that require new skills such as scoring of portfolios or serving as mentor teachers that provide opportunities for teachers to discuss their practice and share ideas. Teacher networks (including electronic) can also focus on specific subject-matter and can deepen teachers' understanding of content and skills. Collaboration between schools and colleges can also strengthen staff development opportunities. CPRE (1995c) also suggested that professional development schools which are collaborative efforts between public schools and higher education have been found to be effective. Finally, CPRE (1995c) indicated that there are increasing numbers of teachers conducting research in their classrooms and schools in cooperation with their colleagues and university faculty. There is considerable evidence that involving teachers in research can stimulate discussion, help define problems, and lead to changes in teaching practices.

Lee, Smith, and Croninger (1996), in a report on one of the extensive restructuring studies conducted by the Center on Organization and Restructuring of Schools, summarized findings on 11,000 students enrolled in 820 secondary schools across the nation. In the schools that were characterized by professional learning communities, the staff had worked together as part of a professional community. The school staff shared a collective responsibility for the success of all students. Findings indicated that teachers and other staff members experienced more satisfaction and higher morale. In addition students dropped out less often and cut fewer classes. Both staff and students had lower rates of absenteeism.

Boyer (1995) concluded that the most important factor in a successful school was that of connection (e.g., teachers finding solutions together). He also reported that when teachers operated as team members, they are more likely to be consistently well informed, professionally renewed, and inspired to positively impact students.

In summary, the above and other research studies have provided insights into how professional development can translate into higher standards of teaching and learning for all students. Resulting student outcomes have included decreased dropout rates; fewer classes "cut";

lower rates of absenteeism; larger academic gains in math, science, history, and reading; and smaller achievement gaps between students from different background (Corcoran, 1995).

School and Community-Based Management

School-based or site-based management (SBM) has been a widespread reform measure (Malen, Ogawa, & Kranz, 1990; Ogawa & White, 1994). Malen, Ogawa, and Kranz (1990, p. 290) define school-based or site-based management (SBM) as a "form of decentralization that identifies the individual school as the primary unit of improvement and relies on the redistribution of decision-making authority as the primary means through which improvements might be stimulated and sustained". SBM usually includes the creation of school-site councils. Murphy and Beck (1995) reported that SBM usually takes one of three forms: administrative control SBM, professional control SBM, and community control SBM. A fourth variation involves power exercised equally by school professionals and parent/community members.

Leithwood and Menzies (1998) examined 83 empirical studies of SBM. Both positive and negative effects on students, teachers, and people in other relevant roles were reviewed. They found several complications in reviewing these studies (e.g., limitations in the existing databases, studies not designed to rule out competing hypotheses, and lack of data).

Leithwood and Menzies (1998) found that eleven studies reported nine separate effects on students. Related to effects on students, studies of community control SBM accounted for most of the evidence concerning both positive and negative (or neutral) student effects. Overall, the results were inconclusive to have significant payoffs for students. Leithwood and Menzies (1998) reported more evidence available about the effects of SBM on teachers than any other group. The results showed that professional control SBM had the greatest overall impact on teachers with an impact that is overall positive, except for an increase on teachers' workloads.

In their literature review, Leithwood and Menzier (1998) found a total of 29 studies that reported ten outcomes concerning principals--seven positive and three negative. Overall, the effects on principals seemed to be largely positive. Leithwood and Menzies (1998) found 18 studies that identified five types of effects on parents--three positive and two negative. Eleven studies found that SBM resulted in more opportunities for parent input into decision making. Although positive effects were noted relative to leadership roles by parents and other community members, parental effects were reported to remain uncertain except for the possible effect of the professional control of SBM on opportunities that parents have to provide input into school decisions.

Relative to district administrators, SBM was found "to have increased stress and workload, distanced the administrator from the school, reduced the number of district administrators, was associated with large funding cuts, and devolved considerable power to schools" (Leithwood & Menzies, 1998, p. 338).

Thirty-five studies reviewed by Leithwood and Menzies (1998) reported 18 effects on the school as a whole. Community-control SBM was found to have the widest range of effects on schools, and administrative control was found to have the least. Leithwood and Menzies (1998)

found that evidence of school effects suggested "that administrative control SBM does little to change the school as a whole, whereas community control SBM changes the school most. But changes associated with community control SBM are not all, or mostly, positive in nature" (p. 339). An overall conclusion was made by Leithwood and Menzies (1998) that SBM has both positive and negative effects on students, teachers, and people in other relevant roles. Their review found little evidence of positive effects on student achievement or school success.

Noble, Deemer, and Davis (1996) also found that conclusive empirical research on SBM is still limited with a number of methodological concerns. Joynson (1991) reported that research studies have failed to find a relationship between SBM and student achievement. In an analysis of 200 SBM documents, Taylor and Bogotch (1994, p. 314) found that "teachers did not change their instructional methods as a result of their greater involvement in decision making."

Conclusion

This background paper provides research-based trends and conclusions regarding a number of inputs and processes that have been thought to impact student outcomes in positive, negative, or neutral ways. Although not exhaustive, the paper highlights components which should be considered in student-focused learning environments to support improved achievement, developmental milestones, and preparation for careers and independent living, to enhance equity for all students; and to balance inputs, processes, and outcomes. There is little doubt that the variables discussed in this paper interact with one another and do not independently produce the observed student outcomes. The interaction of independent variables is difficult to assess and measure in applied research such as in the schools; and, as a consequence, little is available in the body of research and literature that decisively determines their interaction impact.

It is important to note that this paper reminds us that the research and the literature have limitations in that there are many studies that are not scientifically controlled (e.g., with experimental and control groups). In addition, sample size is often limited and other methodological variables are questionable. There is much opinion and advocacy within the research and literature. Much educational research is not precise and dependable. Yet, it is the best that we have, and the research and literature findings can help guide our efforts to maximize the outcomes for our students. In the process of selecting the most salient inputs and processes, many local and state factors also need to be considered such as political climate, unique combinations of resources, student enrollment patterns, student mobility, demographics, scale of implementation, human talent and expertise, as well as dynamic interactions between school personnel, parents, specific teachers, and students.

It should be obvious that there is no definite or absolute set of inputs and process variables that can guarantee student success or outcomes. Instead, they all must be examined in the context of a state, individual school, its faculty, and the community that encompasses it. A balance must be achieved between inputs, processes, and outcomes. Related to this balance, *A Nation at Risk* (1983) reminded us of the following:

> We do not believe that a public commitment to excellence and educational reform must be made at the expense of a strong public commitment to the equitable treatment of our diverse population. The twin goals of equity and high-quality schooling have profound and practical meaning for our economy and society, and we cannot permit one to yield to the other either in principle or in practice. To do so would deny young people their chance to learn and live according to their aspirations and abilities. Our goal must be to develop the talents of all to their fullest.

References

Abelmann, C.H., & S.B. Kenyon. (April, 1966). *Distractions from teaching and learning: Lessons from Kentucky's use of rewards*. Paper presented at the meeting of the American Educational Research Association Annual Conference, New York, New York.

Anderson, R. (1994). *State technology activities related to teachers*. Washington, DC: Office of Technology Assessment.

Achilles, C.M (1997, October). Small classes, big possibilities. *The School Administrator, 54* (9).Achilles, C.M. , Kiser-Kling, K., Aust, A., & Owen, J. (1994). *Success starts small: life in a small class*. (Final Report, Small-Grant School-Based Research). Greensboro, NC: University of North Carolina, 1994.

Ahearn, E. M. (1995). *Caseload/class size in special education: A brief analysis of state regulations*. Alexandra, VA: National Association of State Directors of Special Education.

Akerhielm, K. (1994). *Adding value to the value-added educational production function. Proceedings of the American Statistical Association.* In Sander, W. (1998). *Endogenous expenditures and student achievement*. Paper prepared for the American Educational Research Association's 1998 Annual Meeting, April, 1998.

American Institute for Research (1998) *How much is needed? Measuring "adequate" educational investments in individual school districts, states, and across the nation.*

Anderson, L. (1983). Instruction and time-on-task: A review. *Journal of Curriculum Studies, 13*, 289-303.

Anderson, R.H., & B. N. Pavan. (1993). *Nongradedness: Helping it to happen*. Lancaster, PA: Technomic Publishing.

Anderson, L., Fiester, L., Gonzales, M. & E. Pechman (Eds.). (1996). *Improving America's schools: A newsletter on issues in school reform*. Washington, DC: U.S. Department of Education.

Armstrong, T. (1987). *In their own way*. Los Angeles: Jeremy P. Tarcher, Inc.

Astin A.W. (1993). *What matters in college? Four critical years revisited*. San Francisco: Jossey-Bass.

Azar, Beth. (1988). Home environment is crucial to literacy. *APA Monitor website. Bulletin, #18.* Bloomington, IN: Phi Delta Kappa, Center for Evaluation, Development, and Research.

Ball, D.L., & G.W. McDiarmid. (1990). The subject-matter preparation of teachers. In W.H. Houston (Ed.), *Handbook of Research on Teacher Education*. (pp. 437-449) New York: Macmillan.

Barber, B.R. (November, 1993). America skips school. *Harper's Magazine*, p. 40.

Barker, R.G. & R.V. Gump. (1964). *Big school, small school: High school size and behavior. Stanford,* CA: Stanford University Press.

Bates, J.T. (1993). Portrait of a successful rural alternative school. *Rural Educator, 14*(3), 20-24.

Beer, M., Eisenstat, F.A., & Spector, B. (1990). Why change programs don't produce. Harvard *Business Review, 68*(6), 158-166.

Benjamin, L.A. (1993). Parents' literacy and their children's success in school: Recent research, promising practices, and research implications. *Education Research Report*. Washington, DC: U.S. Department of Education.

Berlinger, D., & Cassanova, U. Peer tutoring: A new look at a popular practice. *Instructor, 97*(5), 14-15.

Berry, G.L. (Summer, 1993). Psychological services providers, the opportunity to learn and inner-city students. Beyond mere curricular reform. *Journal of Negro Education*, 62(3), 355-363.

Blumenfeld, P.C. (1991). Motivating project-based learning: Sustaining the doing, supporting the learning. *Educational Psychologist, 26*, 269-298.

Borg, W. R. (1980). Time and school learning. In Denha, C., and A. Lieberman (Eds). *Time to learn*. Washington, DC: National Institute of Education.

Boyer, E.L. (1995). *The basic school: A community for learning*. Princeton, NJ: Carnegie Foundation for the Advancement of Teaching

Braddock, J.H., & J.M. McParland. (1993). The education of early adolescents. In L. Darling-Hammond (Ed.), *Review of research in education, 19*, 135-170. Washington, DC: American Educational Research Association.

Brandt, R. (1996). Overview: Climate in the classroom -- and in the community. Educational Leadership. 54 (1).

Bryk, A.S. & Y.M.Thum. (1989). *The effects of high school organization on dropping exploratory investigation.* Center for Research on Education.

Byrk, A.S., & M.E. Driscoll. (1998). *The high school as community: Influences and consequences for students and teachers*. Chicago, IL: University of Chicago.

Butler, J.A. (1987). *Homework. Close-up Nol 1.* Portland, OR: Northwest Regional Educational Laboratory.

Canady, R.L. (October, 1988). A cure for fragmented school schedules in elementary schools. *Educational Leadership, 46*, 65-67.

Canady, R.L., & M.D. Rettig. (November, 1995). *Educational Leadership 53*(3).

Canady, R.L.,. & M.D. Rettig. (1995). *Block scheduling: A catalyst for change in high schools*. Princeton, N.J.: Eye on Education.

Canady, R.L., & M.D. Rettig. (December, 1993). Unlocking the lockstep high school schedule, *Kappan,* 310-314.

Canady, R.L., & J.M. Reina. (January, 1993). Parallel block scheduling: An alternative structure. *Principal, 72*(2), 26-29.

Card, D., and A.B. Krueger. (1995). School resources and student outcomes: An overview estimation when the correlation between instruments and the endogenous variables is weak. *Journal of the American Statistical Association, 90*, 443-450.

Carpenter, T.P., Fennema, E., Peterson, P.L., Chiang, C. & Loef, M. (1989). Using knowledge of children's thinking in classroom teaching: An experimental study. *American Educational Research Journal, 26,* 499-531.

Carlson, R.V. (1987). School assessment and school improvement: An organizational analysis. *Educational Planning, 7*(1), 3-14.

Carroll, J.B. (1963). A model of school learning. In Cotton, K. & K. Wikelund, Educational time factors. Portland, OR: Northwest Regional Educational Laboratory.

Cassidy, S. & S. Tair. (1988). *Study of bilingual teacher training programs in California*. Rancho Paolos Verdes, CA: Educational Development Network.

Cassidy, S. & S. Tair. (1989). Follow-up to the 1988 study. Rancho Paolos Verdes, CA: Educational Development Network.

Catterall, J. (1997). Special section: Economic analysis of education policy. *Educational Evaluation and Policy Analysis, 19*(4), 297-299.

Century, J. (1994). *Making sense of the literature on equity in education. Draft one: ...A think piece....* Newton, MA: Educational Development Center, Inc., Statewide Systemic Initiative Equity Leadership Institute.

Clark, R.M.. (1992). Homework-focused parenting practices that positively affect student achievement. In *Chavkin, N. & Feyl, N. (Eds). (1993). Families and Schools in a Pluralistic Society*, Chapter 4, pp. 85-105. Albany: State University of New York Press.

Clark, R.M. (1983). *Family life and school achievement*. Chicago: University of Chicago Press

Clinard, J., & L. Foster. (1998). Leadership in a fishbowl: A new accreditation process. *Educational Leadership*, 53-56.

Colorado State Department of Education. (1982, May). *Indicators of quality schools: Instrument to assess the educational quality of your school.* Washington, D.C.: (ERIC Clearinghouse No. EA016370).

Coleman, J.S., Campbell, E.Q, Hobson, C.F., McParland, J., Mood, A.M.,Weifeld, F.D., & York, R.L. (1966). *Equality of educational opportunity*. Washington, DC: U.S. Department of Health, Education, and Welfare, Office of Education, U.S. Government printing Office.

Committee for Economic Development. (1994). Putting learning first: Governing and managing the schools for high achievement. Statement by the research and policy committee of the CED. In: Oswald, L.J. (1995). *Priority on learning: Efficient use of resources. ERIC Digest*, Number 100. New York, NY: Author.

Conley, S.C., Bacharach, S.B., & Bauer, S. (1989). The school work environment and dissatisfaction. *Educational Administration Quarterly, 15*(1), 78-81.

Consortium for Policy Research in Education (1995a). *Helping teachers teach well: Transforming professional development.* CPRE Policy Brief. New Brunswick, NJ: Carriage House at the Eagleton Institute of Politics, Rutgers University.

Consortium for Policy Research in Education (1995b). *Technology and education report: Technical research report. Volume l: Findings and conclusions.* CPRE Policy Brief. New Brúnswick, NJ: Carriage House at the Eagleton Institute of Politics, Rutgers University.

Consortium for Policy Research in Education (1995c). *Building capacity for education reform.* CPRE Policy Brief. New Brunswick, NJ: Carriage House at the Eagleton Institute of Politics, Rutgers University.

Consortium for Policy Research in Education (1996). *School reform and student diversity.* New Brunswick, NJ: Carriage House at the Eagleton Institute of Politics, Rutgers University.

Corcoran, T.B. (1995). *Helping teachers teach well: Transforming professional development. CPRE Policy Brief.* New Brunswick, NJ: Eagleton institute of Politics, Rutgers University.

Corcoran, T. B. (1995) *Transforming professional development for teachers: A guide for state policymakers.* Washington, DC.: National Governors' Association.

Costa, A.L. (1991). *Developing minds*, Vol. 1. Alexandria, VA: Association for Supervision and Curriculum Development.

Cotton, K. (1997). *Computer-assisted instruction.* Portland, OR: Northwest Regional Educational Laboratory.

Cotton, K. & K.R. Wikelund. (1997). *Educational time factors. School improvement research* series. Portland, OR: Northwest Regional Educational Laboratory.

Cotton, K. & K.R. Wikelund. (1997). *Parent involvement in education. School improvement research* series. Portland, OR: Northwest Regional Educational Laboratory.

Council of Chief State School Officers. (1995). *State Responsibility for Student Opportunities: Commitment to Standards and Success for All.* Washington, DC: Author.

Council of Chief State School Officers. (1995). *Restructuring learning for all students: A policy statement by the Council of Chief State School Officers on improved teaching of thinking.* Washington, DC: Author.

Council of Chief State School Officers. (1993). *Ensuring student success through collaboration. Identifying cross-cutting outcomes for use as a focal point for change. Issue Brief No. 1.*. Washington, DC: Aut

Council of Chief State School Officers (1992). *Commitments to standards and success for all. Policy Statement.* Washington, DC: Author.

Council of Chief State School Officers (1992). *Turning points states in action.* Washington, DC: Author.

Council of Chief State School Officers. (1991). *Improving student performance through learning technologies.* Washington, DC: Author.

Coyle-Williams, M. (1990). *Improving outcomes for students with special needs: Integrating academic and vocational education. TASPP Brief, 2*(1).

Cradler, J. (1994). *Summary of current research and evaluation findings on technology in education.* San Francisco, CA: Far West Laboratory.

Crisci, P.E., March, J.K., Petes, K.H. & Orrach, L.P. (1988, April). *Results of the two-year pilot of the achievement formula that applies the correlates of effective schools and recommendations of the "excellence" reports to predict, monitor, and enhance student achievement.* Paper presented at the meeting of the American Educational Research Association. New Orleans, LA.

Cuban, L. (1988). The at-risk label and the problem of urban school reform. *Phi Delta Kappan, (70*(10). 780-801

Dale, A. (January, 1995). *The American education diet: Can U.S. students survive on junk food?*. Center for Education Reform.

Damon, W., & E. Phelps. (1989). Strategies uses of peer learning in children's education. *Peer relationships in child development*. T.J. Berndt & G.W. Ladd (Eds). New York: John Wiley and Sons.

Darling-Hammond, L. (1997). Unequal opportunity: Race and education. *The Brookings Review, 16*(2), pp. 28-32.

Darling-Hammond, L. (1997). *The right to learn: A blueprint for creating schools that work*. San Francisco: Jossey-Bass.

Darling-Hammond, L. (August, 1994). National standards and assessments: Will they improve education. *American Journal of Education, 102*(4), 478-510.

Darling-Hammond, L. (1997). *The right to learn: A blueprint for creating schools that work*. San Francisco: Jossey Bass.

Darling-Hammond, L,.& B. Berry. (1998). *Reforming teaching: A response to Ballou and Podgursky*. New York: Columbia University.

Darling-Hammond, L., & M.W. McLaughlin. (1995) Policies that support professional development in an era of reform. *Phi Delta Kappan, 76*(8), 597-604.

Deal, T. (1985). The symbolism of effective schools. *The Elementary School Journal*, 601-620.

Dimock, K.V. (1992). *School context: Bridge or barrier to change*. Southwest Educational Development Laboratory.

Druian, G., & J.A.B. Butler. (1987). *Effective schooling practices and at-risk youth: What the research shows*. Portland, OR: Northwest Regional Educational Laboratory.

Echevarria, J. & R. McDonough (1993). *Instructional conversations in special education settings: Issues and accommodations*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.

Edge, D., & D.T. Davis. (1994). *Inclusion of parents and families of children with disabilities in the educational process: Issues, concerns, and paradigm shifts*. Plantation, FL: South Atlantic Regional Resource Center.

Education Commission of the States (1992). Minimum high school graduation requirements: Standard diplomas. *Clearinghouse Notes*. Washington DC.

Eichenstein, R. (1994). *Project achieve, Part I: Qualitative findings 1993-1994*. Brooklyn, NY: Office of Educational Research, New York City Board of Education (ED 379 388).

Egelson, P., Harman, P., & Achilles, C.M. (1996). *Does class size make a difference?* Greensboro, NC: SouthEastern Regional Vision for Education.

Epstein, J.L., Simon, B.S., and Salinas, K.C. (1997). *Effects of teachers involve parents in schoolwork language arts interactive homework in the middle grades*. Research Bulletin #18. Bloomington, IN: Phi Delta Kappa/Center for Evaluation, Development, and Research.

Epstein, J.L., Clark, L., Salinas, K.C. & Sanders, M.G. (1997). *Scaling up school-family-community connects in Baltimore: Effects on students attendance and achievement*. Paper presented at the Annual Meeting of the AERA, 1997.

Everson, S.T., Scollay, S.J., Fabert, B., & Garcia, M. (1986). An effective school results: Initial district, school, teacher, and student outcomes in a participating school. *Journal of Research and Development in Education, 19*(3), 35-47.

Ferguson, R.F. (Summer, 1991). Paying for public education: New evidence of how and why money matters. *Harvard Journal of Education, 28*, 465-498.

Ferguson, R. F., & H.F. Ladd. (1996). How and why money matters: An analysis of Alabama schools. In Ladd, H. (Ed.). *Holding schools accountable*. Washington, DC: The Brookings Institution.

Figlio, D.N. (1997). Did the 'tax revolt' reduce school performance? *Journal of Public Economics, 65,* 245-269. In Sander, W. (1998). *Endogenous expenditures and student achievement.* Paper prepared for the American Educational Research Association's 1998 Annual Meeting, April, 1998.

Finn, J. D. (May,1998) Parental engagement that makes a difference. *Educational Leadership: Vol. 55* (6), pp. 20-24.

Finn, J.D. (1998). *Class size and students at risk: What is know? What is next?.* Washington, DC: Office of Educational Research and Improvement, U.S. Department of Education.

Finn, J.D. & C.M. Achilles. (1998). *Tennessee's class-size study: Questions answered, questions posed.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego.

Firestone, W.A., & B. Wilson. (1991). *Restructuring schools: The principals's leadership.* In Kershner, J., & Connolly, J.A. (Eds.) *At-risk students and school restructuring.* Philadelphia, PA: Research for Better Schools.

Fogarty, R. (1991). *The mindful school: How to integrate the curricula.* Palatine, IL: Skylight publishing, Inc., 1991.Fowler, W.J. (1995). School size and student outcomes. *Advances in Educational Productivity, 5,* 3-26.

Fowler, W.J. (1992). *What do we know about school size? What should we know?.* A paper presented at the annual meeting of the American Educational Research Association.

Fowler, W.J., & Walberg, H.J. (Summer, 1991). School size, characteristics, and outcomes. *Educational Evaluation and Policy Analysis, 13* (2), 189-202.

Fredrick, W.C. & H.J. Walberg. (1980). Learning as a function of time. *Journal of Educational Research, 73,* 183-194.

Fredrick, W.C., Walberg, H.J., & Rasher, S.P., (1979). Time, teacher comments, and achievement in urban high schools. *Journal of Educational Research, 73,* 63-65.

Fullan, M.G. (1991). *The new meaning of educational change. (2nd Edition)* New York: College Press.

Fullan, M.G. (1992). Visions that blind. *Educational Leadership, 49*(5), pp. 19-23.

Fullan, M. (1993). *Change forces.* New York: Falmer Press.

Glass, G.V., & M.L. Smith. (1978). *Meta-analysis of research on the relationship of class size and achievement.* San Francisco, CA: Far West Lab for Educational Research and Development (ED 168 129).

Goals 2000 Educate America Act, Public Law 103-327, p. 115.

Goldhaber, D.D., & D.J. Brewer. (1996). *Evaluating the effect of teacher degree level on educational performance.* Rockville Maryland: Westat, Inc.

Gottfredson, D.C. (1985). *School size and school disorder. Report No. 360.* Baltimore, MD: Johns Hopkins University.

Gottfredson, G.D., & D.C. Gottfredson. (May, 1989). *School Climate, Academic performance, Attendance, and Dropout.* Charleston, DC: Charleston County School District. (ERIC Clearinghouse No. TM013594).

Gottfredson, G.D., & D.C. Daiger. (1979). *Disruption in 500 schools.* Baltimore: The Johns Hopkins University, Center for Social Organization of Schools.

Greene, M.B. (1998). Youth violence in the city: The role of educational interventions. *Health Education & Behavior, 25* (2), 175-193.

Greenwald, R., , Hedges, L.D., & Laine, R.D. (1996) In: Bracey, G.W. & Resnick, M. (1998). *Raising the bar: A school board primer on student achievement.* Alexandria, VA: National School Boards Association.

Greenwood, C.R., Carta, J.J., & Hall, V. (1988). The use of peer tutoring strategies in classroom management and educational instruction. *School Psychology Review, 17*(2), 258-275.

Gregory, T. (1992). Small is too big: Achieving a critical anti-mass in the high school. In *Source book on school and district size, cost, and quality.* Minneapolis, MN: Minnesota University, Hubert H. Humphrey Institute of public Affairs; Oak Brook, IL: North Central Regional Educational Laboratory, 1992, 1-31 (ED361 159).

Guiton, G., & J. Oakes. (Fall, 1995). Opportunity to learn and conceptions of educational equality. *Educational Evaluation and Policy Analysis, 17*(3), 323-336.

Guskey, T.R., & K.D. Peterson. (1996). The road to classroom change. *Educational Leadership, 53*(4) 10-14.

Haller, E.G., Monk, D.H., & Tien, L.T. (1993). Small schools and higher-order thinking skills. *Journal of Research in Rural Education, 9*(2), 66-73.

Hamilton, S.F. (1983). Synthesis of research on the social side of schooling. *Educational Leadership, 40*(5), 56-72.

Huang, G. & C. Howley. (1993). Mitigating disadvantage: Effects of small-scale schooling on student achievement in Alaska. *Journal of Research in Rural Education, 9*(3), 137-149.

Hanushek, E.A. (1998). Assessing the effects of school reports on student performance: An update. *Educational Evaluation and Policy Analysis, 19*(2), 141-164.

Hanushek, E.A. (1986). The economics of schooling. *Journal of Economic Literature, 24*, 1141-1177.

Hanushek, E. (1987). Outcomes, incentives, and beliefs: Reflections on analysis of the economies of schools. *Educational Evaluation and Policy Analysis. 19*(4), 301-308.

Hanusheck, E.A., Rivkin, S.G., & Taylor, L.L. (1996). Aggregation and the estimated effects of school resources. *Review of Economics and Statistics, 89*, 611-627. In: Sander, W. (1998). *Endogenous expenditures and student achievement.* Paper prepared for the American Educational Research Association's 1998 Annual Meeting.

Heckman, J., Lyne-Ferar, A., & Todd, P. (1996). Human capital pricing equations with an application to estimating the effect of school quality on earnings. Review of Economics and Statistics, 78, 562-610 In Sander,W. (1998). *Endogenous expenditures and student achievement.* Paper prepared for the American Educational Research Association's 1998 Annual Meeting.

Hedges, L.V., Laine, R.D., & Greenwald, R. (1994). Does money matter? A meta-analysis of studies on the effects of differential school inputs on student outcomes. *Educational Researcher, 23*(3), 5-14.

Henderson, A.T., & N. Berla. (Eds). (1994). *A new generation of evidence: The family is critical to student achievement.* National Committee for Citizens in Education: Washington, DC.

Henderson, A.T. (1987). *The evidence continues to grow: Parent involvement improves student achievement.* Columbia: National Committee for Citizens in Education. In: Edge, D. & Davis D.T. (1994). *Inclusion of parents and families of children with disabilities in the educational process: Issues, concerns, and paradigm shifts.* Plantation, FL: South Atlantic Regional Resource Center.

Heneveld, W., & H. Craig. (January, 1995). *A framework for using qualitative research to inform policy -makers and empower practitioners: Lessons from Madagascar.* Paper presented at the meeting of the International Congress for School Effectiveness and Improvement, Leeuwarden, Netherlands.

Hobbs, D. (1989). Relationships between school and school district size, education student performance: A review of the literature. In Dimock, K.V. (1992). *School context: Bridge or barrier to change.* Southwest Educational Development Laboratory.

Holmes, M., and P. Cross. (1989). Time spent on homework and academic achievement. *Educational Research, 31*, 35-45.

Hossler, C., Stage, F., & Gallagher, K. (1988). The relationship of increased instructional time to student achievement. Policy bulletin: *Consortium on Educational Policy Studies, 1*, 1-23.

Howley , C. (1994). *The academic effectiveness of small-scale schooling (an update). ERIC Digest.* Charleston, WV: Clearinghouse on Rural Education and Small Schools (ED 372 897).

Howley, C.B. (1996). The Matthew principle: A West Virginia replication? *Education Policy Analysis Archives, 3*(18), 1-25.

Individuals with Disabilities Education Act (IDEA). U.S. C. Title 20 Section 1400 et seq. Formerly titled the Education for All Handicapped Children Act, originally enacted as P.L. 94-142 (1975).

Jacobs, H.H. (1989). *Interdisciplinary curriculum: Design and implementation*. Alexandria, VA: Association for Supervision and Curriculum Development.

Jenkins, J.R., & L. M. Jenkins. (1987). Making peer tutoring work. *Educational Leadership, 44*(6), 64-68.

Johnson, M.A. (1991). *Principal leadership, shared decision making, and student achievement*. Unpublished doctoral dissertation, The University of Texas at Austin.

Joyce, B., & B. Showers. (1988). The coaching of teaching. *Educational Leadership* 40(1), 4-10.

Jackson, S.F. (Summer, 1993). Opportunity to learn: The health connection. *Journal of Negro Education, 62*, (3), 377-393.

Kansas State Board of Education. (1991). *Kansas quality performance accreditation. A dynamic changing plan for living, learning, and working in an international community*. Topeka: Author.

Katz, L.G., & J.D. Raths. (1986). Dispositions as goals for teacher education. *Teaching and Teacher Education*, 301-307.

Katz, L.G., and S.C. Chard. (1989). *Engaging children's minds: The project approach*. Norwood NJ: Ablex.

Kellaghan, T., Sloane, K., Alvarez, B, & Bloom, B.S. (1993) . *The home environment & school learning: Promoting parental involvement in the education of children*. San Francisco, CA: Jossey-Bass, Inc.

Kershaw, C.A., & M.A. Blank. (1993). *Student and educator perceptions of the impact of an alternative school structure*. Paper presented at the Annual Meeting of the American Educational Research Association, Atlanta, GA, April 1993 (ED 360 729).

Kidder, S.J., O'Reilly, R.P., & Kiesling, H.J. (1975). *Quantity and quality of instruction: Empirical investigations*. Paper presented at the Annual Meeting of the American Educational Research Association. (ED 11- 417).

King, K. (1998). *Accountability and school improvement*. Jefferson City, MO: Department of Elementary and Secondary Education.

Krueger, A.B. (1998). *Experimental estimates of education production functions*: Princeton: Princeton University Department of Economics.

Krug. S.E. (June, 1992). *Instructional leadership. School instructional climate and student learning outcomes. Project Report*. Washington, DC: U.S. Department of Education.

Kulik, C.L. & J. Kulik. (1984). *Effects of ability grouping on elementary school pupils: A meta-analysis*. Paper presented at the annual meeting of the American Psychological Association. Ontario, Canada.

Lake, K. (1997). *Integrated curriculum. School improvement research series*. Portland, OR: Northwest Regional Educational Laboratory.

Lawton, S.B., Leithwood, K., Batcher, E., Donaldson, E.L., & Stewart, R. (1988). *Student retention and transition in Ontario high schools: Policies, practices, and prospects*. Toronto: Ministry of Education.

Lee, V.E., Smith, J.B., Croninger, R.G. (January 5,1996). *Understanding high school restructuring effects on the equitable distribution of learning in mathematics and science*. University of Wisconsin - Madison. (U.S. Department of Education Grant No. R117Q000005).

Lee, V.E., Bryk, A., & Smith, J.B. (1993). The organization of effective secondary schools. In L. Darling-Hammond (Ed.). *Review of research in education, 19*(2), 129-15. Washington, DC: American Educational Research Association.

Lee, V.E., & J. B. Smith. (1994). High school restructuring and student achievement: A new study finds strong links. *Issues in Restructuring Schools, 7*, 1-5 &16.

Lee, V.E., & J.B. Smith. (1995). Effects of high school restructuring and size on gains in achievement and engagement for early secondary school student. Madison, WI: Center for Education Research, University of Wisconsin.

Leithwood, K., & T. Menzies. (1998). Forms and effects of school-based management: A review. *Educational Policy 12*(3), 325-346.

Levin, H. (1983). *Cost-effectiveness analysis: A primer*. Beverly Hills, CA: Sage.

Levine, D.U. (1991). Creating effective schools: Findings and implications from reform and practice. *Phi Delta Kappan, 72*(5), 389-393.

Levine, D.U,. & L. W. Lezotte. (1995). *Handbook of research on multicultural education.* (pp. 525-547). (ERIC Clearinghouse Document No. UDO020408).

Lezotte, L. W., & B. A. Bancroft. (April, 1985). *School improvement based on effective school research: A promising approach for economically disadvantaged and minority* students. ERIC (Clearinghouse Document No. EA018806).Louis, K.S., & M.B. Miles. (1990). *Improving the urban high school.* New York: Teachers Press.

MAGI Educational Service. (1995). *The New York State special education class size research study*. Rye, NY: MAGI Educational Services, Inc.

MacIver, D. (1990). Meeting the needs of young adolescents: Advisory groups, interdisciplinary teaching teams, and school transition programs. *Phi Delta Kappan 71*(6), 458-465.

Malen, B., Ogawa, R.T., & Kranz, J. (1990). *What do we know about school-based management? A case study of the literature--A call for research.* In W.H. Chase & J.F. Witte (Eds.). *Choice and control in American education: Vol. 2.* pp. 289-342. The practice of choice, decentralization, and school restructuring. London: Falmer.

March, J.K., Peters, K.H., Schwartz, M., & R.E. Crisci. (Ap4il, 1993). The long-term impact of a staff development program on student performance in an urban setting. Paper presented at the Annual Meeting of the American Educational Research Association, Atlanta, George (ED 361 434).

Martino, L.R. (1994). Peer tutoring classes for young adolescents: A cost-effective strategy. *Middle School Journal, 25*(4), 55-58.

McParland, J.M. & S.M. Nettles (1991). Using adults as advocates or mentors for at-risk middle school students: A two year evaluation of project RAISE. *American Journal of Education, 99*(2), 568-586.

McCrea, L.D. (1996). *A review of literature: special education and class size*. Lansing, MI: Michigan State Board of Education.

McCrobbie, J., Finn, J.D., & Harman, P. (1998). *Class size reduction: Lessons learned from experience. Policy brief.* San Francisco, CA: WestEd.

McDiarmid, G.W., Ball, D.L., & Anderson, C.W. (1989). *Why staying ahead one chapter doesn't really work: Subject-specific pedagogy*. In M. Reynolds (Ed.), *The Knowledge Base for Beginning Teachers*. pp. 193-205. New York: Pergamon and the American Association of Colleges of Teacher Education.

McLaughlin, M.W. & L.A. Shepard, L.A. (1995). *Improving education through standards-based reform* (Report No. ISBN-0942469-08-9). Palo Alto, CA: Stanford University, National Academy of Education. (ERIC Document Reproduction Service No. Ed 387 867).

Meier, D.W. (September,1996). The big benefits of smallness. *Educational Leadership*, 54(1).

Medrich, E.A. & J.E. Griffith (1992). *International mathematics and science assessments: What have we learned?* Washington, DC: U.S. Department of Education, National Center for Education Statistics (NCES 92-011.

Miles, K., & L. Darling-Hammond. (1998). Rethinking the allocation of teaching resources: Some lessons from high-performing schools. *Educational Evaluation and Policy Analysis, 20*(1), 9-29.

Miles, M. B., & K.S. Louis. (1990). Mustering the will and skill for change. *Educational Leadership, 47(8)*, 57-61.

Missouri Department of Elementary and Secondary Education. (1997). *School improvement program: Standards and indicators manual*. Jefferson City, MO: Author.

Mosteller, M (1996). In: Bracey, G.W., & Resnick, M. (1998). *Raising the bar: A school board primer on student achievement.* Alexandria, VA: National School Boards Association.

Murphy, J., & L.G. Beck. (1995). *School-based management as school reform: Taking stock*. Thousand Oaks, CA: Corwin Press.

National Association of State Directors of Special Education. (November, 1995). *NASDSE: Vision for Balanced Accountability*. Alexandria, VA: Author.

National Association of State Directors of Special Education. (November, 1997). *Guiding principles for an inclusive accountability system*. Alexandria, VA: Author.

National Center on Educational Outcomes (January, 1995). *Opportunity-to-learn standards. NCEO Policy Directions. Issue 4*, 1-7.

National Commission on Teaching and America's Future. (1996). *What matters most: Teaching for America's future*. New York: Author.

National Council on Education Standards and Testing. (1992). *Raising standards for American education*. A report to Congress, the Secretary of Education, the National Education Goals Panel, and the American People. Washington, DC: Author.

National Center for Education Statistics (1993). *The condition of education*. Washington, DC: U.S. Department of Education.

National Center for Education Statistics. (1993). *Public high school graduates, 1990-91, compared with ninth grade enrollment in fall, 1987*. Washington, DC: U.S. Department of Education,

National Center for Education Statistics. (1993). *Digest of education statistics 1993*. Washington, DC: U.S. Department of Education.

National Center for Research on Teacher Education (1988). Teacher education and learning to teach: A research agenda. *Journal of Teacher Education, 39*, 27-32.

National Commission of Excellence in Education (1983). *A nation at risk: A national imperative for educational reform*. Washington, DC: Author.

National Education Association. (1998). Small classes hold long-term benefits. *NEA Today Online*. Washington, DC: Author.

National Education Goals Panel (1995). *The national education goals report*. Washington, DC. Author.

National School Boards Association (1998). *Raising the bar: A school board primer on student achievement*. Alexandria, VA: Author.

Niskanen, W. A. (1989). *The performance of America's primary and secondary schools. Paper presented at the Conference on Education in the Inner City*, November, 1989. (ERIC Document No. ED 319866).

Noble, A.J., Deemer, S., & Davis, B. (1996). *School-based management*. Dover, DE: Delaware Education Research and Development Center.

Noddings, N. (1992). *The challenge to care in schools: An alternative approach to education*. New York: Teachers College Press.

Norris, C.A., & C.M. Raigeluth. (Winter,1991). Themes for change: A look at systemic experiences. Educational Horizons, 69(2), 90-96.

Oakes, J., Ormseth, T., Bell, R., & Camp, P. (1990). *Multiplying inequalities: the effects of race, social class, and tracking on opportunities to learn mathematics and science*. Santa Monica, CA: RAND Corporation.

Ogawa, R., & P. White. (1994). *School-based management in public schools*. In S.A. Mohram & P. Wohletter (Eds.). *School-based management: Organizing for high performance*. San Francisco: Jossey-Bass.

Page, R.M. (1991). Adolescent use of alcohol, tobacco, and other psychoactive substances: Relation to high school size. *American Secondary Education, 19*(2), 16-20.

Page, R.M. (1990). High school size as a factor in adolescent loneliness. *The High School Journal*, 73 (3), 150-153.

Pajak, EF., & C.D. Glickman. (1989). *Dimensions of school district improvements*. Educational Leadership, 46(8), 61-64.

Patterson, J.L., Purkey, S.C., & Parker, J.V. (1986). *Productive school systems for the world*. Alexandria, VA: Association for Supervision and Curriculum Development.

Peterson, K.D. & R. Brietzke. (1994). *Building collaborative cultures: Seeking ways to reshape urban schools*. Oak Brook, IL: North Central Regional Educational Laboratory.

Pink, W.I. (1990. Staff development for urban school improvement: Lessons learned in case studies. *School Effectiveness and School Improvement, 1*(1), 41-60.

Pittman, R.B., & P. Haughwout. (Winter, 1987). Influence of high school size on dropouts. *Educational Evaluation and Policy Analysis, 9*(4), 337-343.

Portner, J. (March, 1997). Once status symbol for schools, accreditation becomes rote drill. *Education Week*, pp. 1-2 and 31.

Purkey, W.W., & D.N. Asby. (1988). The mental health of students: Nobody minds? *Pearson-Centered Review, 3(1)*, 41-49.

Rehabilitation Act #504, U.S. C., Title 29, #794.

Robinson, G.E. (1990). Synthesis of research on the effects of class size. *Educational Leadership, 47*, 80-90.

Ross, J.A. (1994). *Beliefs that make a difference: The origins and impacts of teacher efficacy*. Paper presented at the annual meeting of the Canadian Association for Curriculum Studies.

Rossman, G.B. & J. Slazman. (1994). *Evaluating inclusive education programs: A survey of current practice*. Paper prepared for the Invitational Conference on Barriers to Inclusive Education, Racine, WI.

Sander, W. (1998). *Endogenous expenditures and student achievement*. Paper prepared for the American Educational Research Association's 1998 Annual Meeting..

Sander, W. (1993). Expenditures and student achievement in Illinois. *Journal of Public Economics, 51*, 403-441.

Sanders, M.G., Epstein, J.L., & Connors-Tadros, L.J. (1998). Family partnership with high schools: The parents perspective. CRESPAR Report, Baltimore, MD: Johns Hopkins University.

Sapon-Shevin, M. (1994). *Playing favorites: Gifted education and the disruption of community*. New York: State University of New York Press.

Schein, E.H. (1985). *Organizational culture and leadership*. San Francisco: Jossey Bass.

Schwartz, W. (1995). *Opportunity to learn standards: Their impact on urban students*. New York, New York: ERIC Clearinghouse on Urban Education.

Secada, W. (1992). Race, ethnicity, social class, language, and achievement in mathematics. In D. Groups (Ed.), *Handbook of research on mathematics teaching and learning*. Reston, VA: National Council of Teachers of Mathematics, Inc.

Seifert, E.H., & J.J., Jr. (1984). Relationships between task time and learning gains in secondary schools. *Journal of Educational Research, 78*, 5-10.

Shanker, A. (February, 1989). Restructuring leadership: *The Education Digest, 54*(2), 23-33.

Shields, P.M. (1990). *A review of research on school and community influence on the curriculum and instruction*. In M.S. Knapp & P.M. Shields (Eds.) *Better schooling for children of poverty* (pp. XIII-3 - XIII-10). Washington, DC: U.S. Department of Education.

Shulman, L.E. (1986). Those who understand: Knowledge growth in teaching. Educational *Researcher, 15*, 4-14.

Slavin, R.E. (1986). *Ability grouping and student achievement in elementary schools: A best evidence synthesis*. Baltimore, MD: Center for Research on Elementary and Middle Schools.

Slavin, R.E. (1990). Achievement effects of ability grouping in secondary schools: A best evidence synthesis. *Review of Educational Research, 60*(3), 471-500.

Smith, N.M. (1979). Allocation of time and achievement in elementary social studies. *Journal of Educational Research, 72*, 231-236.

Smith, L.M., & P.M. Keith. (1971). *The social psychological aspects of school buildings*. (Report No. CRP-S-223). St. Louis, MO: Washington University, Graduate Institute of Education (ERIC Document Reproduction Service No. ED 010 672).

Spady, W.G. (1988). Organizing for results: The basis of authentic restructuring. *Educational Leadership, 46(2)*, 4-8.

Steinberg, L. (1996). *Beyond the classroom*. New York: Simon and Schuster.

Taylor, D.L., & I.E. Bogotch. (1994). School-level effects of teachers' participation in decision making. *Educational Evaluation and Policy Analysis, 16*(3), 312-319.

Thousand, J.S., R.A. Villa, and A.J. Nevin, Eds. (1994). *Creativity and collaborative learning: A practical guide to empowering students and teachers*. Baltimore: Paul H. Brookes.

Thurlow, M.L. (1993). Instruction in special education classrooms under varying student-teacher ratios. *The Elementary School Journal, 93*(3), 305-20.

Thurlow, M.L., Ysseldyke, J.E., Wotruba, J.W. (1988). *Student and instructional outcomes under varying student-teacher ratios in special education*. Minneapolis, MN: University of Minnesota.

Tizard, J., Schofield, W.N.; & Hewison, J. (1982). Collaboration between teachers and parents in assisting children's reading. *British Journal of Educational Psychology, 52* (Part 1), 1-15.

U.S. Department of Education (1996). *Eighteenth Annual Report to Congress on the Implementation of the Individual With Disabilities Education Act*. Washington, DC: Author U.S. Department of Education (April, 1993). *A nation at risk*. Washington, DC: Author.

Vander Sijde, P.C. (1988). Relationships of classroom climate with student learning outcomes and school climate. *Journal of classroom interaction. 23*(2), 40-43.

Vars, G. (1987). *Interdisciplinary teaching in the middle grades: Why and how*. Columbus, OH: National Middle School Association.

Viadero, D. (November, 1997). Accrediting bodies offer improvement guide. *Education Week*, p. 5.

Villa, R. A., & J.S. Thousand. (1992). Restructuring public school systems: Strategies for organizational change and progress. In *Restructuring for caring and effective education: An administrative guide to creating heterogeneous schools*, pp 108-140, edited by Villa, R.A., Thousand, J.S., Stainback, W., and Stainback, S. Baltimore: Paul H. Brookes.

Virginia Department of Education. (1994). *Special education program standards study: Briefing reports and draft recommendations*. Richmond, VA: Virginia Department of Education.

Villanova, R.M. (May,1982). *Measuring and validating the characteristics of instructionally effective schools in Connecticut*. Paper presented at the meeting of the American Educational Research Association. New York, NY. (ERIC Clearinghouse No. TM820222)

Walberg, H.J. (1992). On local control: Is bigger better? In *Source Book on School and District Size, Cost, and Quality*. Minneapolis, MN: Minnesota University, Hubert H. Humphrey institute of Public Affairs: Oak Brook, IL: North Central Regional Educational Laboratory, 1992, 118-134 (ED 361 164).

Weber, J.R. (1987, June). *Instructional leadership: A composite working model*. Synthesis of the literature. Elmhurst, Ill.: North Central Regional Educational Lab. (ERIC Clearinghouse No. EA019726).

Wehlage, G.G., Rutter, R.A., Smith, G.A., Lesko, N., & Ferrandex, R.R. (1989). *Red school house as communities of support*. The Falmer Press.

Wehlage, G.G., & R.A. Rutter. (1986). Dropping out: How much do schools contribute a problem. In G. Natriello (Ed.), *School dropouts: Patterns and policies*,. pp. 70-88. New York: Teachers College Press.

Wenglinsky, H. (1997). *When money matters: How educational expectations improve student performance and how they don't*. Princeton, NJ: The Educational Testing Services, Policy Information Center.

Wiley, D.E., and A. Harishchfeger (1974). An explosion of a myth: Quantity of school and exposure to instruction, major educational vehicles. *Educational Researchers 3*(4), 7-11.

Wilson, A. (1995). *Violence and traumatic stress in urban schools*. Regional Laboratory for Educational Improvement of the Northeast & Islands: Andover, MA.

Wilson, B.L. & G.B. Rossman (1993). *Mandating academic excellent: High school responses to state curriculum reform*. New York: Teachers College.

Wilson, S.W., & S. Wineberg. (1988). Peering at history through different lenses: The role of disciplinary perspectives in teaching history. *Teachers College Record, 89*, 525-539

Wimplebert, R.K., Teddie, C., & Stringfield, S. (1989). Sensitivity to context: Effective schools research. *Educational Administration Quarterly, 25*(1), 82-10.

Word, E. (1990). *Student/teacher ratio (STAR) Tennessee's K-3 class size study*. Nashville, Tenn: Project STAR Office.